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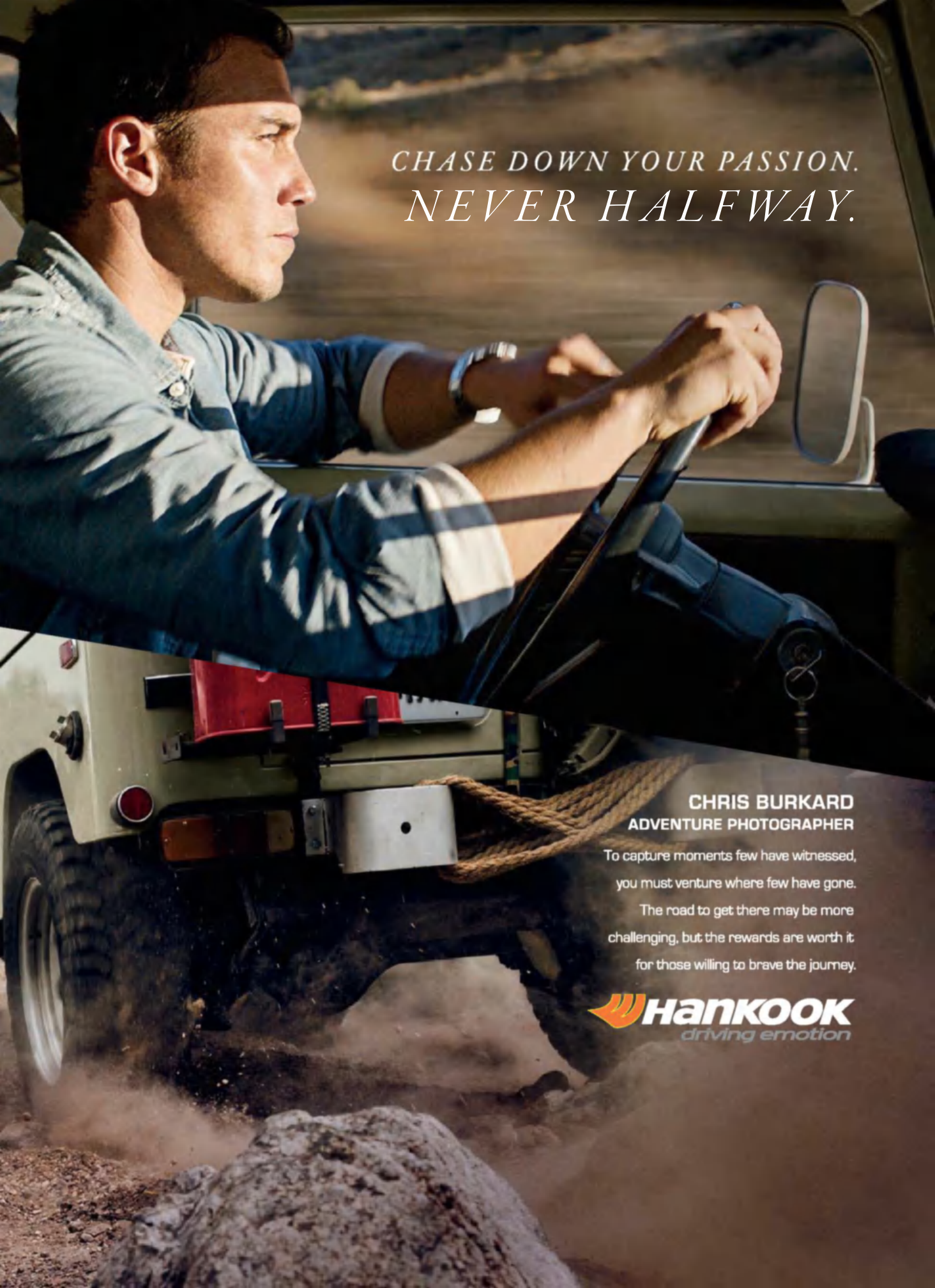


- **RAM'S REBEL WITH A CAUSE**
- **ULTIMATE ADVENTURE AXLE BUILD**
- **BORDER-TO-BORDER WHEELING TRIP**

TEN

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NETWORK



A man with dark hair, wearing a blue and white striped long-sleeved shirt, is driving a vehicle through a rocky, dusty landscape. He is looking forward with a focused expression. The vehicle's steering wheel and dashboard are visible. The background is a blurred, hilly landscape under bright sunlight.

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CHRIS BURKARD
ADVENTURE PHOTOGRAPHER

To capture moments few have witnessed,
you must venture where few have gone.

The road to get there may be more
challenging, but the rewards are worth it
for those willing to brave the journey.

 **Hankook**
driving emotion

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ON THE COVER: Harry Situations photographer Brian Sumner caught Rob Bonney riding shotgun with Kasey the Kid in this awesome Cheap Truck Power Wagon during our muddy low-buck excursion. And when reader Joe Ortiz told his kids that his Sammy would be on the cover we couldn't make him a liar.



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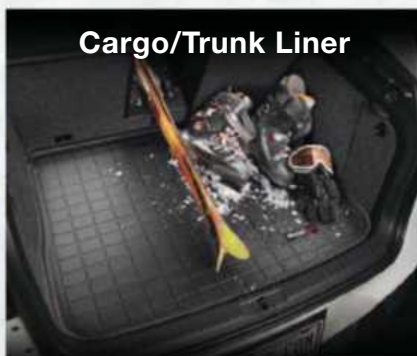
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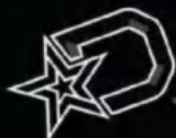
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ALL WHEEL PATENT PENDING



MORE LOW-BUCK IDEAS

Here are some air register vents for a trailer house repurposed as hood vents on my 1997 XJ. Please ignore the bad paint. This is a SoCal vehicle that had been left out in the open for years, so the paint on all horizontal surfaces has been destroyed. I'm in the process of rattle-canning the whole thing. I actually like the way the vents look for a \$15 mod, and they helped drop underhood temps significantly.

ANONYMOUS

Via email

Not a bad idea, thanks!

UA 2016 & TTC 620 CHALLENGER

I have a 1978 Datsun 620 pickup. It has an 8-inch lift already with 39.5 swamper, a Buick 4.3l V-6, a turbo 350 transmission, and Dana 30 front and factory Datsun rear axles. I am wanting to build it for best of everything but don't know which way I want to go. I am thinking Dana 44 front and 10-bolt rear but don't know gearing and whether to run four-link front and rear or leaf springs. I want to build it up for your Ultimate Adventure and *Four Wheeler's* Top Truck Challenge.

THAD WEIGEL

Via email

That sounds like a cool truck. Having competed in Top Truck Challenge (2009) and having been on quite a few Ultimate Adventures, I think your axle choices are a little weak. I think the 10-bolt rear isn't worth the effort to swap in. Top Truck demands big tires and big power to be competitive (and even get voted in), so I'd look for something stronger. Most TTC trucks are running a minimum of 44-inch rubber and 1-ton axles. I think 39.5-inch tires are the smallest you'd want to run, and even with just a V-6 I wouldn't go smaller than front and rear Dana 60s.

Now UA is very different, because no one wins UA, but you still need to wheel hard for a week straight. UA is more of an endurance

event, and lighter parts can survive, but I still wouldn't like anything smaller than a 60 for that big a tire. Plus you'll be hauling lots of gear and stuff, so strong reliable axles are important unless you want to be fixing axles in camp every night. Want a dirt-simple recipe? Get a front Dana 60 and a rear Corporate 14-bolt, and add 5.13 or 5.38 gears, a front Detroit locker, and a rear ARB Air Locker. You'll be able to hammer on them with your V-6 and auto trans and come home smiling. I doubt you'll win TTC with that combo, but you could survive UA without too much drama.

As for suspension, either links or leaves would be fine. Links are cool, allow more performance, and require more engineering to get right. But leaves are just as cool because no one expects them to work well and you're instantly an underdog, and most of the time they do work quite well.



THEM'S FIGHTIN WORDS!

When will you be accepting applications for the 2016 Ultimate Adventure? I've got a way better Range Rover (same model) than the white one this year. Thank you.

TRAVIS

Via email

Wow, Travis, that's a big claim you're making because although Jeffrey Corwin and Chris Breidenbach had a few issues with their Rover, I'd hardly say it wasn't capable. You can apply any time for UA at 4wor-ua.com. Maybe you'll get the chance to test your metal next summer!

BIG BAMA REPOWER

I really enjoyed your project "Alabama Army Truck"! What if you did a milder build of that or the K5 Blazer and swapped in an Isuzu four-cylinder turbodiesel? They make about the same horsepower and more torque than a small-block Chevy of that era. They will also bolt to any small-block bellhousing. The ultimate goal

would be a cheap capable trail rig/daily driver that could average 20 mpg plus.

JASON DRIVER

Via email

The Alabama Army Truck is in need of a new engine after we pulled the supercharged V-8 out and put it in the Ultimate Adventure Jeep. I was leaning towards an 8.1L big-block, but a small diesel would be cool as well, though I doubt that 3.9L would make for the thrill behind the wheel that the big-block does. Of course, I really just want the truck to be a good work truck that can still run trails. Maybe we'll look into the Isuzu and see what type of power they're making. In fact, to all our readers, drop me an email if you have an opinion on what the big truck needs under the hood next: fred.williams@4wheeloffroad.com.

FORD OR CHEBBY?

I own a 2001 crew cab short-wheelbase Ford Super Duty. Should I spend a little money to make it a capable trail rig or ditch it and go with a 1970s Blazer? I'm a big guy, so a Jeep is out of the question. I don't hardcore rockcrawl, but I do hang with some guys that run Jeeps and an early Bronco. I'm just curious on your opinion. Thanks for your input.

BILLY

Via email

A Chevy Blazer will be smaller, but I say keep the Super Duty. You can always bob the bed and add rock sliders; it already has strong axles. If you resign yourself to the fact that it will get body damage then you'll soon realize that it can be an awesome wheeling machine. We've had two Super Dutys as our official Ultimate Adventure vehicles over the years, and yes, they're big, but they are fun to squeeze through trails. You already have it. I say build it and get to wheelin' it.

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TOY SAMI

BC TOY

VEHICLE: 1991 Toyota 4Runner **OWNER:** Cass Robson, British Columbia, Canada **TIRES & WHEELS:** 33x12.5R15 Adventuro M/Ts on white spoke steelies **SUSPENSION:** Stock IFS/stock coil rear **DRIVETRAIN:** 3.0L V-6, automatic transmission **OTHER DOODADS:** Cut 4 inches out of rear fenders to clear 33s with no lift, rock lights, aftermarket HID headlights, LED light bars **DOES EVERYTHING WORK THE WAY YOU WANT?:** Everything works just great, but it for sure needs an SAS and a 3.4L V-6 with a 5-speed **ANYTHING YOU WOULD CHANGE?:** A new front bumper, lockers, regearing

VEHICLE: 1987 Suzuki Samurai **OWNER:** James Anderson, Lacey, WA **TIRES & WHEELS:** 36x13.50R15 Super Swamper Iroks on 15x10 Rock Crusher wheels, Longfield weld-on beadlocks **SUSPENSION:** 5-inch Calmini shackle-reverseal, mixed leaf spring packs, Ford F-350 shocks with custom hoops **DRIVETRAIN:** Stock transmission, 6.5:1 transfer case with twin sticks and driveline disconnect, Calmini cradle and skidplate, 1985 Toyota front axle with Lock-Rite, Longfield 30-spline axles and drive flanges, 1995 Toyota rear axle with chromoly shafts, Yukon spool **PERFORMANCE MODS:** 1.3L I-4, oversized pistons, upgraded cam, CAI, header **OTHER DOODADS:** Custom rock sliders and bumpers 8K Mile Marker winch, cutting brakes **DOES EVERYTHING WORK THE WAY YOU WANT?:** Yes, it works very well **ANYTHING YOU WOULD CHANGE?:** Longer wheelbase (coming soon) **FUNNIEST WHEELING INCIDENT:** Pulling my buddy's rig back onto its wheels and getting too happy with the throttle, flopping it all the way over back onto its roof **ANYTHING TO ADD?:** I am currently building a 1.6L Sidekick engine to swap into it

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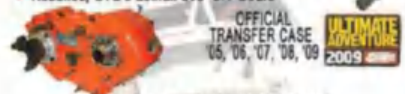
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MOBILE DOG HOUSE

VEHICLE: 1994 Jeep Cherokee XJ **OWNER:** Brian Daddio, Linden, NC **TIRES & WHEELS:** 33x12.5R15 BFGoodrich ATs on 15x10 Pro Comp alloys **SUSPENSION:** 4½-inch lift, mix of Pro Comp and Rubicon Express parts **DRIVETRAIN:** 4.0L I-6, AW4 automatic transmission, NP231 transfer case, high-pinion Dana 30 front axle, Chrysler 8¼ rear axle **PERFORMANCE MODS:** 703 Neon injectors, 2000 XJ intake manifold swap, Dorman exhaust manifold **OTHER DOODADS:** Herculedine floorboards, braided-steel brake hoses, drilled and slotted rotors, ZJ steering **FUNNIEST WHEELING INCIDENT:** Was at the top of Daniels Trail at Uwharrie National Forest with my wife and German shepherd when the motor started to blow. We rock-bounced all the way down the mountain. Our puppy was scared to death. **DOES EVERYTHING WORK THE WAY YOU WANT?:** Yes **ANYTHING YOU WOULD CHANGE?:** Long arms, shackle relocation, Bilstein 5100s, 1-ton axles, SYE, Tom Woods driveshafts

POWERFUL WAGON

VEHICLE: 1986 Dodge Ramcharger **OWNER:** Sean Orser, Prince George, B.C., Canada **TIRES & WHEELS:** 42-inch Pitbull Rockers, Staun internal beadlocks, TMR rock rings **SUSPENSION:** 52-inch/64-inch leaves works out to a 4-inch lift **DRIVETRAIN:** 727 automatic transmission with 2,500-stall converter, 1410 driveshafts, NP205 transfer case, Dana 60 front axle, 35-spline stubs, Detroit Locker, Dana 70 rear axle, welded spiders **PERFORMANCE MODS:** 440 V-8 swap, headers, Edelbrock Performer RPM intake manifold, Holley 750 carburetor **OTHER DOODADS:** Crossover steering, lots of body damage **DOES EVERYTHING WORK THE WAY YOU WANT?:** This sucker's a brute but there's always something to improve **ANYTHING YOU WOULD CHANGE?:** Full hydro steering, a Doubler, EFI **FUNNIEST WHEELING INCIDENT:** Being stuck in a snowbank alone in an industrial park and being towed out by a security guard in a Subaru **ANYTHING TO ADD?:** This truck is on its way to being a full truggy





CAMO AVO

VEHICLE: 2005 Chevy Avalanche Z71
OWNER: Greg Wilkinson, Larkspur, CO
TIRES & WHEELS: 35-inch Cooper Discoverer STTs on 18-inch Gear Alloy 718 Blackjack wheels
SUSPENSION: Fabtech 6-inch lift, Fabtech multi-shocks up front, Bilstein 5100s in rear
DRIVETRAIN: Built 4L65E transmission, NP246, Deraile trans cooler with fan
PERFORMANCE MODS: Stock 5.3L V-8, Diablo Trinity tuner, Gibson headers, K&N CAI
OTHER DOODADS: CST tie rods, custom sway bar links, Iron Cross winch bumper, Badlands 12K winch, PowerStop drilled/slotted brakes, Rigid LED cubes and 50-inch curved light bar on SoCal Supertrucks mounting brackets, Realtree Snow AP camo wrap, Rhino-lined rockers and fender flares
DOES EVERYTHING WORK THE WAY YOU WANT?: Most of the time
FUNNIEST WHEELING INCIDENT: Ran out of gas at the top of Red Cone. Luckily a Jeep that passed by had a spare gas tank and offered me a sip. I appreciate Jeepers!
ANYTHING YOU WOULD CHANGE?: LQ9 6.0L, 4L80E, Atlas
ANYTHING TO ADD?: Going for more horsepower and already have my 14-bolt rear axle. Debating the SAS, but what to do with the RCV Ultimate IFS CVs? This is my daily driver, too.



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TIRE-SPINNER

VEHICLE: 2000 Jeep Wrangler Sport
OWNER: Brandon Farnsworth, Oklahoma City,
 OK **TIRES & WHEELS:** 35x12.5R15 BFG KM2s
 on Cragar 15x10 steelies **SUSPENSION:** 5-inch
 Skyjacker budget lift, swapped-in Rubicon

Express adjustable control arms **DRIVETRAIN:**
 NV3550 transmission, NP231 transfer case
 with SYE, Tom Wood's driveshafts, Dana 30
 front axle with Ox Locker, Dana 44 rear axle
 with Detroit Locker **PERFORMANCE MODS:**
 Cold air intake through the firewall to the
 cowl, 5.0L Mustang injectors **OTHER DOO-**
DADS: Evo boatsides, TNT flat fenders, boat
 load of LEDs **FUNNIEST WHEELING INCIDENT:**
 Had sweet revenge on a buddy that had been
 spraying everyone with water on a river trip.
 Finally caught him out of his Jeep and covered
 him and his rig with a tidal wave! **DOES**
EVERYTHING WORK THE WAY YOU WANT?:
 Gettin' there. **ANYTHING YOU WOULD**
CHANGE?: I need more horsies! **ANYTHING TO**
ADD?: This is seven years of work so far. For
 those of you who feel like you're spinning your
 tires, keep at it.



SASSY TOY

VEHICLE: 1994 Toyota pickup **OWNER:** James McDonald, Petaluma, CA **TIRES &**
WHEELS: 35x12.5 Goodyear MT/Rs on 15-inch Mickey Thompson Classics **SUSPENSION:**
 Leafspring lift - 6-inch front, 5-inch rear **DRIVETRAIN:** W56 5-speed manual transmis-
 sion, stock RF1A transfer case, front SAS with older Toyota axle, Warn hubs, high-steer,
 stock rear axle with ARB Air Locker, 4.88 gears **PERFORMANCE MODS:** 22RE, Pacesetter
 header, 2¼-inch exhaust **OTHER DOODADS:** ARE Overland truck cap, Warn bumper, Warn
 Zeon 8 winch, VisionX Light Cannons **DOES EVERYTHING WORK THE WAY YOU WANT?:** It
 surprises me all the time **ANYTHING YOU WOULD CHANGE?:** 3-link suspension with King
 coilovers **FUNNIEST WHEELING INCIDENT:** Coming back from a trail near Mt. Rainier, I hit a
 stump and grounded the battery to the body, blowing off all the ground cables **ANYTHING**
TO ADD?: I'm in the Coast Guard and bought the truck with 164,000 miles for only \$2,500

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 >**OTHER MODS**
 >**DOES IT WORK THE WAY YOU WANT?**
 >**ANYTHING YOU WOULD CHANGE?**
 >**FUNNIEST WHEELING INCIDENT**
 >**ANYTHING TO ADD?**



AIRPLANE TUG

VEHICLE: 1985 Jeep CJ-10A **OWNER:**
 Anthony Hermes, King George, VA **TIRES**
& WHEELS: 31x10.5R15 Dunlops on
 stock Jeep spoke wheels **SUSPENSION:**
 SOA, 4-inch lift **DRIVETRAIN:** Stock Nis-
 san diesel engine, Turboflite 3-speed
 automatic transmission, NP205 transfer
 case, Dana 44 front axle, Chrysler 8¼-
 inch rear axle **OTHER DOODADS:** Fabri-
 cated the pickup bed from a surplus Army
 ¾-ton trailer **DOES EVERYTHING WORK**
THE WAY YOU WANT?: Everything works
 right now **ANYTHING TO ADD?:** I bought
 this Jeep from Army surplus designated
 as a CJ-10A Tow Vehicle. I removed the
 tow box, axles, and rear 5-ton truck
 springs. I extended the frame to make it
 back into a pickup configuration.



JOE'S ZUKI

VEHICLE: 1988½ Suzuki Samurai (aka
 JoeZuki) **OWNER:** Joe Ortiz, El Cajon, CA
TIRES & WHEELS: 33x10.5R15 BFGoodrich
 ATs on 15x8 Black Rock simulated beadlocks
SUSPENSION: 8-inch SOA lift on Jeep YJ
 springs, 1-inch axle relocation plates, Monroe
 shocks **DRIVETRAIN:** Stock **PERFORMANCE**
MODS: Rebuilt 1.3L I-4, head shaved, mild
 cam, 10.5:1 pistons **OTHER DOODADS:** Frame
 extended 16 inches, rear axle moved back
 14½ inches, 17-gallon fuel tank behind rear
 seat, custom rollcage, custom aluminum tool-
 box **DOES EVERYTHING WORK THE WAY YOU**
WANT?: Works great. Actually shocked how
 well the suspension turned out. **ANYTHING**
YOU WOULD CHANGE?: 6.5:1 transfer case
 gears, different shocks, 2.4L GM EcoTec or GM
 4.3L V-6 **FUNNIEST WHEELING INCIDENT:** The
 wife said to stop in the middle of a mud hole
 for a picture. Like a dummy I did—and sunk
 to the frame. **ANYTHING TO ADD?:** Love the
 magazine. I told my kids as I was building it
 that one day they would see it on the cover of
 a magazine. They laughed. 🍌



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“Ford has again teased us with photos of the latest Raptor”



NEW RAPTOR TRAIL TESTED

After posting photos of 2017 Raptor prototypes undergoing desert testing in the Southwest (which we showed you last month), Ford has again teased us with pictures of the latest Raptor being flogged by engineers, this time along tight, two-track trails in northern Michigan. The test mules combine parts of a 2015 F-150 with the latest Raptor gear, which includes new 3-inch Fox internal bypass racing shocks and a new on-demand transfer case, which “combines the best attributes of clutch-driven, on-demand all-wheel drive with durable, mechanical-locking four-wheel drive,” says Ford. The new Raptor is scheduled to go on sale this fall.

EARTH WATCH

● **SENATOR DIANNE FEINSTEIN HAS ASKED PRESIDENT OBAMA TO CREATE THREE NEW NATIONAL** monuments in the Southern California desert, an action that would bypass Congressional action on these areas, according to the *Los Angeles Times*. Feinstein introduced two bills in the last six years to protect the land, but Congress has not been able to pass them. The proposed areas include the Mojave Trails National Monument, encompassing 921,000 acres that stretches along Interstate 40 (old Route 66) between Ludlow and Needles; Sand to Snow National Monument, which includes 135,000 acres between the San Bernardino National Forest and Joshua Tree National Park; and Castle Mountains National Monument, an area near the Mojave National Preserve. Amy Granat, managing director of the California Off-Road Vehicle Association (CORVA), called the action “an overreach of executive authority.”

THIS JUST IN

● **DIRT EVERY DAY, OUR** off-road show presented by 4Wheel Parts and airing on the Motor Trend Channel on YouTube, will be back for 2016. Until then you can catch up on our prior episodes and watch the remainder of our 2015 season:
OCT. 6: Mad Maxxis Build
OCT. 27: Mad Maxxis Adventure
NOV. 10: Ultimate Adventure 2015
DEC. 22: Cheap Truck Challenge 2015
JAN. 5: A Hawaiian DED
And we just got word on a special episode with Jeep airing in early December.

● **FCA HAS INVESTED \$2.5** million in a new 4x4 dyno at the Chrysler Technology Center that will enable engineers to test vehicles at temperatures as low as minus 40 degrees Fahrenheit and in winds as high as 100 mph. The upgrades, to an existing climatic test cell, include a new front-wheel dyno that can handle loads of up to 350 hp, while a rear-wheel dyno can handle up to 650 hp.

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Jp MAGAZINE 10th Anniversary Wrangler Rubicon
By [Carmichael](#) Feb 10, 2013 10:42 AM



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MOST RECENT ARTICLES



1962 Willys - Short Bed A Vintage Adventure Willys
By [Steve Treasings](#) June 1, 2013
Has our desert with snakes/crocodiles/Jeeps gone too far? Look, we aren't and haven't been saying that if you find a build that works for your platform and intended usage, its...

[FEATURE](#) [4WHEEL](#)

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1972 GMC 2500 Suburban - Sir 'Burban
By [Ken Brubaker](#) May 14, 2013
The Suburban, in production for a staggering 78 years, holds the record as the industry's longest-running model and the only GM SUV has remained either small or compact since its debut. It's a testament to the vehicle's design and the company's commitment to the vehicle's design and the company's commitment to the vehicle's design...

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2014 Chevy Silverado High Country - All Classed Up
By [Austen Jensen](#) February 11, 2013
Chevrolet has just unveiled its class Silverado High Country model which will join the LTZ and 2500 models in the Silverado lineup this fall. We have to admit, we are...

[FEATURE](#) [4WHEEL & OFF ROAD MAGAZINE](#)

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Rigs To Remember
By [Steve Treasings](#) Feb 11, 2013
It's always fun to reminisce and bench race about old rigs, their looks, and seemingly impossible ideas that never quite came to be. Sometimes a quick glance in the proverbial rearview mirror can remind us of things we've...

[FEATURE](#) [FOUR WHEELER](#)

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1975 Jeep CJ-5 - Apple Green A One-Of-A-Kind Classic
By [Yamir Gilling](#) April 1, 2013
There is no doubt that Jeep is an American icon. Almost anyone from just about any part of the world knows what a Jeep is, what it's good for, and what it looks like.

[FEATURE](#) [4WHEEL](#)

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2013 Pickup Truck Of The Year
By [Al Marshall](#) February 6, 2013
For over 24 years we've put the wheel-and-pickup equivalent in our head-to-head battle that is Pickup Truck of the Year. It's a testament to the 1990s model truck showdown, the pickup has to be off-road or significantly...

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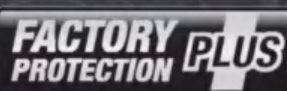
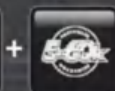
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DRIVELINES



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THIS COLORADO IS BOSS

Chevrolet has introduced two special edition models of the 2016 Colorado pickup. One, the Midnight Edition, features black paint, blacked-out trim, and black 18-inch wheels. The second, seen here, is the Trail Boss, which upgrades

CALENDAR

- **DEC. 4-6:** Henderson 250 off-road race by Best in the Desert, Henderson, NV. Information: bitd.com
- **DEC. 5:** Getting Started Off-Road Driving Clinic by Badlands Off-Road Adventures, Hungry Valley SVRA, Gorman, CA. Information: 310.374.8047, 4x4training.com
- **DEC. 6:** Getting Started Off-Road Driving Clinic by Badlands Off-Road Adventures, Mojave, CA. Information: 310.374.8047, 4x4training.com
- **DEC. 12:** Wheeling 4 Toys by the Brush Beaters Jeep Club, Kansas Rocks Recreation Park, Mapleton, KS. Information: ksrockspark.com



FRESH FACE FOR LAND CRUISER

For 2016, Toyota has updated the styling of the venerable Land Cruiser with new sheetmetal from the A-pillar forward, new taillights and rear bumper, and a redesigned interior with perforated leather upholstery and a new center console. No options are available for the high-end 4x4 other than a choice of black or brown upholstery colors. The Cruiser's 318hp, 5.7L V-8 is now backed by an eight-speed automatic transmission; and new driver-assist technologies include Frontal Collision Avoidance, Frontal Collision Mitigation, Lane Departure Alert, Auto High Beams, and Dynamic Radar Cruise Control.



the Z71 off-road equipment package with 265/65R17 Goodyear Wrangler DuraTec tires on black-finished 17-inch alloy wheels, fender flares, tubular side steps, and a sport bar with LED lighting. The Trail Boss will be available in extended and crew cab bodies, and with any of the Colorado's engines, including the 2.8L Duramax diesel.

● **DEC. 13:** Kansas Rocks Recreation Park open to public, Mapleton, KS. Information: ksrockspark.com

● **DEC. 12-13:** Getting Started Off-Road Driving Clinic by Badlands Off-Road Adventures, Borrego Springs, CA. Information: 310.374.8047, 4x4training.com

● **DEC. 28-JAN. 4:** Fire and Ice Run, Hot Springs ORV Park, Hot Springs, AR. Information: orvpark.com

● **SUBMISSIONS:** Four months in advance, please send the date, location, description, and contact info (phone, email, website) to Calendar, *4-Wheel & Off-Road*, 831 S. Douglas St., El Segundo, CA 90245; fax 818.566.8501; email 4wheeloffroad@enthusiastnetwork.com.



FRAMELESS TRAIL TOP



The Frameless Trail Top installs over the original equipment factory roll bar for a snug fit without the need for additional bows or support hardware.

This unique design allows for larger side windows and increased outward visibility. Remove the side and rear windows to quickly convert the soft top into an open safari top. The fastback style offers improved aerodynamics and a quieter ride than factory bow-style tops. Available for JK - TJ - YJ Wranglers.

rampageproducts.com

COOLEST READING PLACES

COOLEST READING PLACES, OK EDITION

Our 5-year-old son, Garret McRoberts, loves your magazines. He has to have the new one every time it comes out. He brings his magazine along with him everywhere he goes. This weekend we went off-roading at Disney, Oklahoma. He thought it would be awesome to get a picture of him and his friends, Hailey Mattix, age 3, and Brooklynn Mattix, age 7, in your magazine. These kids love off-roading!

TRICIA MCROBERTS



WAITING FOR THE CHOPPER TO ARRIVE

I caught my Chief Geologist, Aling Kupok, reading my magazine while waiting for the helicopter.

JOHN MEARS

Madang Province, PNG
Papua New Guinea

We wondered if John and Aling were waiting to be extracted due to a volcanic eruption or some other natural disaster. He explained, "We are in the process of reestablishing roads in the highlands of Papua New Guinea. We went as



far as we could until landslides blocked our way. We continued to survey the routes by helicopter from that point."

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TOYOTA RELEASES NEW TACOMA

Toyota is calling its new-generation Tacoma “the most powerful and fuel efficient Tacoma ever,” thanks in large part to new powertrain technology. The standard motor, a 2.7L four that will produce 159 hp and 180 lb-ft of torque, will get up to 22 mpg on the highway in 4x4 models when backed by Toyota’s new six-speed automatic transmission. The optional V-6 is an all-new, 3.5L Atkinson-cycle engine fitted with variable valve timing and both direct and port fuel injection. It will generate 278 hp, up 42 over the previous V-6, and 265 lb-ft of torque. Look for 23 highway mpg in 4x4 models with automatic transmissions.

Pricing for the new truck will range from \$23,000 for a base 4x2 to nearly \$35,000 for a top-of-the-line V-6 Limited. The TRD Off-Road models, with a locking rear diff, crawl control, and Multi-Terrain-Select system (in automatic transmission versions), will be priced around \$35,000. 



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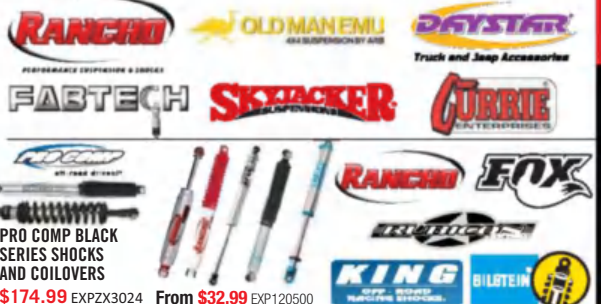
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2015 Ram 1500 4WD	6" Stage I Kit w/ ES	EXPK2101B	\$1868.99
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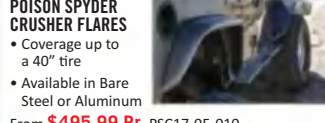
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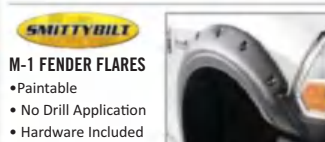
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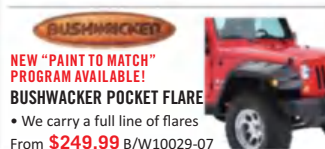
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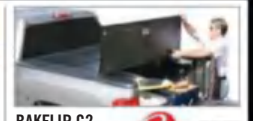
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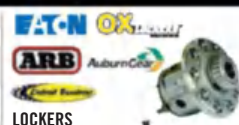


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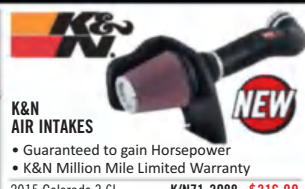
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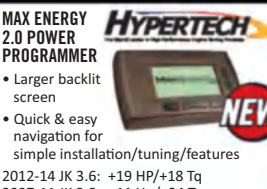
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1 A Camaro SS hood and grille were fitted on the front of the Colorado and fit surprisingly well. Derek Cattran bent all of the tubes himself from 1½x0.120-wall tubing. We appreciate the added interior room of the exo-cage and how it hides behind the front fenders.



WHITE LIGHT



TECH SPECS

2004 CHEVROLET COLORADO

>DRIVETRAIN

ENGINE: LS1 5.7L V-8

TRANSMISSION: TH400 3-speed automatic

TRANSFER CASE: Advance Adapters Atlas II

FRONT AXLE: Corporate 14-bolt with Dana 60 knuckles, 4.10 gears, ARB Air Locker, RCV axleshafts

REAR AXLE: Corporate 14-bolt with 4.10 gears and full spool

>SUSPENSION

SPRINGS & SUCH: Triangulated 4-link with Fox coilover shocks (front and rear)

TIRES & WHEELS: 14/41-17LT Super Swamper Iroks on 17x9 Raceline Monster beadlocks

STEERING: Full PSC steering system with pump, orbital valve, and double-ended ram

OTHER STUFF: Warn Zeon 10S winch, full tube chassis, RCI 15-gallon fuel cell, Corbeau Baja SS seats, Howe radiator, Driveshaft Specialties 1410 drivelines. Oh, and did we mention the nitrous?

by Harry Wagner
PHOTOGRAPHY HARRY WAGNER

LS-POWERED COLORADO BUGGY

WINNING

DESPITE EXCELLENT PROPORTIONS for trail duty, reasonable prices, and sturdy drivetrains, the Chevy Colorado has never enjoyed the same aftermarket support as the Toyota Tacoma or Ford Ranger. Derek Cattran has owned plenty of Toyotas, but the lack of aftermarket support for the Colorado did not concern him, because this time he planned to build everything himself.

Derek started with a 2WD, regular cab Colorado and scrapped everything except the cab, fenders, and bed sides. Even the

frame was replaced with a full tubular frame that Derek built himself. Using parts from Wide Open Design, Derek essentially built a buggy under the Colorado cab, with 14-bolt axles, coilover shocks, and a big, rowdy engine. As if that weren't enough, he added a 75-shot of nitrous for even more power.

After spending nine months in the garage building his Colorado, Derek has been putting his truck to use all over the country, from his home state of Ohio to Oklahoma all the way out to California, where we caught up with him in Johnson Valley at the Hammer Trails. To see more of Derek's truck in action and hear the LS engine sing, search for "colorado truggy" on YouTube.

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2 The PSC full hydraulic steering allows the front suspension to be triangulated for maximum articulation without concerns of bumpsteer. The links are constructed from 2x0.250-wall DOM tubing and fitted with 1¼-inch QA1 rod ends. The links work in conjunction with 2-inch-diameter Fox 14-inch-travel coilovers fitted with a combination of Eibach and Pac coil springs.

3 Derek built a 14-bolt front axle with new tubes and Dana 60 kingpin knuckles. The center intersection was shaved for ground clearance, and an ARB Air Locker and 4.10 gears sit behind the Ballistic Fabrication diff cover. RCV axleshafts transmit power to matching RCV drive-slugs.

4 Power comes from an LS1 engine enhanced with a Thunder Racing Trak Cam, ported LS6 cylinder heads with an LS6 intake manifold, LS6 lifters, and 42-lb/hr injectors. ARP fasteners are used to keep the engine together when Derek squeezes the nitrous bottle, resulting in power north of 600 hp. The engine is cooled by a Howe radiator mounted at the rear of the chassis, with the coolant running through the tubular frametrails.

5 The exterior cage of the Colorado makes the interior quite roomy while still safe. The factory seats were swapped out for Corbeau suspension seats with PRP five-point harnesses, and the gauge cluster and HVAC wiring was tossed for simplicity. Instead, a custom switch panel holds toggle switches and circuit breakers for a host of functions, and a Winters shifter rows the TCI TH400 transmission equipped with a 2,200-stall torque converter and reverse manual valve body.

6 The rear axle is a shaved 14-bolt with a truss and diff cover from Ballistic Fabrication. A full spool wrapped with a 4.10 gearset spin the 42-inch Iroks, while disc brakes slow the Colorado down. The truss provides a mounting location for the upper links of the triangulated four-link rear suspension. Fox 2-inch-diameter, 16-inch-travel coilovers fitted with a combination of Pac and Eibach coil springs and a Currie Antirock sway bar with custom arms complete the rear suspension.

7 Derek cut the stock bed to make the bed-sides that help retain the look of a pickup, but the frame was scrapped in favor of a full tube chassis. Behind the cab, the tube work holds the American-made Howe radiator and dual 12-inch electric fans, RCI 15-gallon aluminum fuel cell in Artec mounts, and rear suspension. Oh, and how can we forget the nitrous bottle? ☘



“He even added a 75-shot of nitrous for more power”





A GOOD TIME ON A NICKEL & DIME

By Fred Williams

PHOTOGRAPHY HARRY WAGNER
AND BRIAN SUMNER

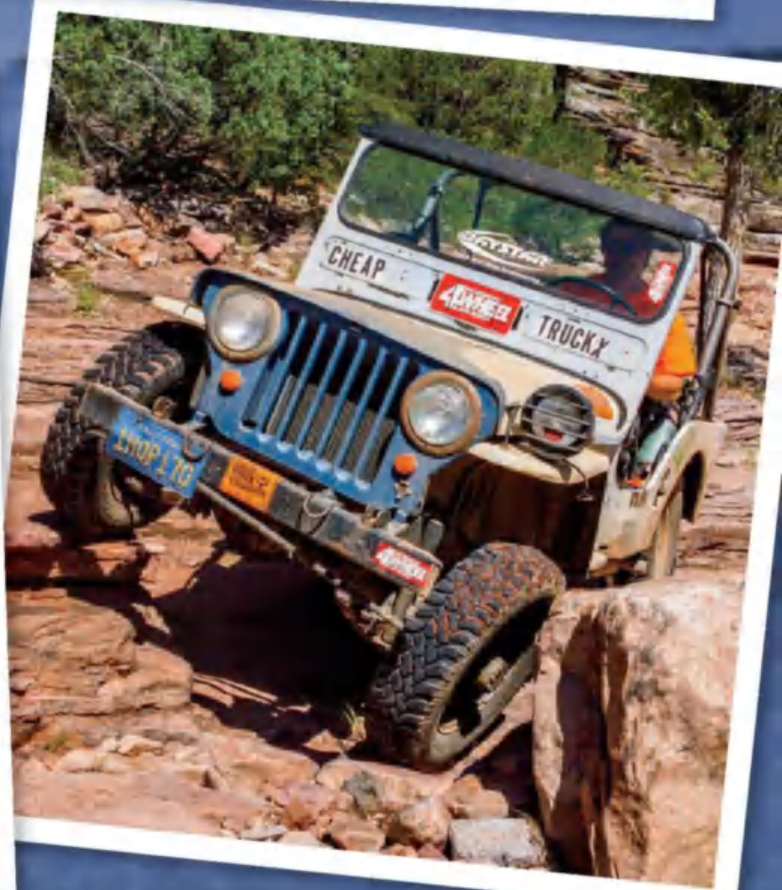
4-WHEELING IS A FUN HOBBY, but it can also be an expensive hobby. There are performance crate engines, custom-built axles, low-geared transfer cases, elaborate rollcages, super-flexy suspensions, ruggedly safe seats, night-slaying off-road lights, and drag-you-out-of-a-big-old-mess winches to buy. Before long your fun hobby becomes a checkbook-killing gold digger. But it doesn't have to be that way.

We started Cheap Truck Challenge as an example of ways to build fun 4x4s for a few dollars. We pick a budget that seems

reasonable to most of the people we asked in the industry, and we try our darndest to stick to it. We want a kid with a summer job to be able to buy a 4x4 one summer and fix it up the next. Driving a while before making changes is good advice no matter what your budget. You should drive any truck you buy for a while before you spend time and money changing it (a rule we are often guilty of breaking).

So here is CTC again. For 2015 we have \$2,015 to buy something from the classifieds, the back lots, or in that old barn and another \$2,015 to soup it up for off-road excellence! Or at least off-road efficiency. Maybe just off-road mediocrity, but at least some semblance of off-road ability. We found four drivers to come up with a project to build on a budget, and then we headed out on an adventure to test their metal and their mettle (look up the difference if you don't know already). Oh, and spoiler alert: We weren't looking for a winner; we were just trying to beat the budget.

Think you can build something even cheaper than us? Then do it and go have fun, because cheap trucks rule!





MY F-350 FAILURE

CHEAP TRUCK FORD

by **Fred Williams**
PHOTOGRAPHY FRED WILLIAMS

THE BEST LAID PLANS OF MICE and men often go astray. When those plans are done by a 16-year-old kid on a budget, they can get sideways fast. And when those plans are done by a magazine editor trying to think like a 16-year-old kid on a budget, you can bet those plans will end up a fiery wreck in a ditch.

I was on the hunt for a cheap truck contender. I already knew what the other guys were bringing, and I was running out of time to get a truck. I wanted a newer American pickup, and I found it on IronPlanet.com. IronPlanet is an online auction site for heavy equipment, trucks, and military surplus stuff. I was perusing the site and came across a sweet 1993 Ford F-350 crew cab long-bed pickup with a 351ci fuel-injected gas V-8 and C6 three-speed automatic transmission. It was perfect for a cheap truck.

It may seem like a lot of truck for a teenage driver, but here were my thoughts. It's big, and big is safe. It has lots of seating.

The kid can haul all his friends to football, soccer, basketball, wrestling, band, rifle club, kung fu practice, whatever instead of making Mom and Dad do that. It has a big bed, so he can haul a lawnmower or firewood and thus start his own summer landscaping business, in turn learning about business and self-reliance. It has a camper shell, so it's good for camping! (Ignore the missing tailgate and rear hatch to the camper). It has 1-ton axles so it's perfect for future upgrades to giant tires, and everyone knows giant tires are awesome. Alternatively, it can be set up to plow snow and the kid could again make himself some spare cash. It's blue, and blue is a good color for a Ford truck. It has a V-8 but not a big-block V-8, so it shouldn't be super-fast (no speeding tickets), it shouldn't get terrible mileage (more money left over), but it won't get great mileage either (not enough money left over to get into trouble). And it already has few dents so no need to worry if some grandma pushes her grocery cart into the truck at the store where the kid's bagging groceries to pay for the truck.

It was basically a foolproof plan (feel free to use any of these excuses to convince



1

I bought this Ford F-350 off IronPlanet.com for \$1,500! The front high-pinion Dana 60 is almost worth that alone, so I was getting a great deal. However, I bought it sight-unseen, and sometimes online auctions can be a gamble. IronPlanet.com has an IronClad Assurance Policy that covers key systems and components; however, on-road performance of the vehicle is not always noted. Upon the Ford's arrival I found that it wouldn't run down the road at speed. It would cruise around the front field easily, but had no power when tasked with road speeds. IronPlanet was more than willing to work with me about the truck after I told them the issues, so I opted to keep the truck and figure out what the drivability issue is. Sometimes a good deal on purchase price means you may need to do some repairs just to get your new 4x4 running and driving safely.

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“It was a foolproof plan, and that’s why it didn’t work”



2

2 Before the truck arrived I knew I wanted to add some rock sliders. On prior CTC adventures I had come home with banged-up rocker panels, and this truck has 11 feet of body between the wheelwells! I ordered up a few sticks of 2x2 tubing with a 1/4-inch wall thickness with plans to weld them to the frame. I opted for square tube because it can be easier to use for a beginner fabricator, and rock sliders are a good beginner project because they are not a safety device like a rollbar or rollcage.

3 I planned on using my trusty Millermatic 210 MIG welder to do the install on the Ford. Paying someone to cut, grind, and weld your new rockers in place is possible, but you can also try bartering with a neighbor or a



3



4

farmer who has a chop saw and welder. Also look into metal shop class at your school or a local tech college; you may even be able to bring your project truck there to work on with school equipment. MIG welding is the easiest welding possible—picture hot-glue-gunning metal together—but it still takes practice. You’ll also want proper safety gear because welding involves UV radiation, sparks, and heat. Miller has you covered (literally) with auto-darkening helmets, protective gloves, and welding jackets. Welding isn’t an inexpensive upgrade, but there are ways around buying a welder and safety gear right out of the gate. For instance, you could borrow someone else’s gear. So we’ll cheat a little and keep this off the budget for now, otherwise expect a chunk of dollars going to these tools, but also



5



6

realize they are tools and can pay themselves off if you get good and start charging other people for welding jobs.

4 Upon the arrival of the Ford, I took my four new General Grabbers and swapped them onto the factory steel 16-inch wheels. The 265/75R16 tires are just an inch taller than the mismatched and well-worn tires the truck came with, but I didn’t need to get new wheels, suspension, or regear the axles to make them work.

5 Traction-aiding devices are important for off-roading, and not much compares to the dirt-simple reliability of a Detroit locker. I found a Detroit for my Sterling 10th rearend at 4Wheel Parts for \$679.99 and was planning on getting it installed for an additional \$350. And this would have just put me over the budget with total upgrade expense at \$2,060.99. However, because the truck wouldn’t run the locker only got installed on the passenger seat until I can sort out the lack-of-power issue.

6 The big 1990s Ford is a pretty simple truck with solid front and rear 1-ton axles and leaf-sprung suspension. However, Ford complicated matters with two massive sway bars and a front track bar. I removed all these parts to allow the suspension to move more freely, and wheeling around the front yard proved it more compliant. I have yet to test any body-roll issues until I can get it going fast enough on a weaving mountain road, but this does show that sometimes upgrades are as simple as removing unwanted components.

NOW WHAT?

If I were a kid on a budget I’d be bummed my new Ferd is a turd, but cheap trucks are not always diamonds in the rough. Sometimes they’re cheap for a reason. Once I get the dollars I’ll dive into the engine bay and transmission and see what I can find. The engine needs a compression check, the fuel pressure needs to be checked, and I’ll look at a basic tune-up with new plugs and wires. The C6 may need a new vacuum modulator to help it shift better, and this truck is strapped with hoses galore as part of its smog system, which could be the culprit. I also want to get the Detroit installed, but will consider a gear change at the same time since I found the axles only have 3.54 gears listed—but even that may be wrong since the rear axle has an integrated speed sensor, which might be messing with the speedometer. And did I mention I want to upgrade all my body and spring bushings with new polyurethane parts from Daystar? The short story is my big Ford has many issues to address (and a nasty exhaust leak) so I’ll have to keep riding my bike to the grocery store for a few more months, but at least I’ll save money by not getting that gym membership!

your parents to let you buy a big crew cab Ford). And that's why it didn't work.

Buying a truck online is a gamble. This truck wasn't in my home state, so I was buying it based on the website description. Every truck IronPlanet sells goes through an inspection to verify the vehicles status, but the inspections are not always done at highway speeds, which, come to find out, meant that my new F-350 had a hidden issue. I bought the truck and got it delivered only to find it wasn't running quite right. The V-8 idled just fine and drove around the barnyard OK, but when you dropped the hammer to get on the local roads it fell on its face. The transmission wouldn't always shift into Third gear and sometimes started in Second. The speedometer seemed to be reading twice the actual speed?! For some reason the Ford had no power and couldn't get out of its own way and would quickly overheat. Talk about no speeding tickets! This big blue Ferd (rhymes with turd) was going to get a ticket as a slow-moving road obstruction if I didn't figure something out fast. Oh, and did I mention the exhaust leak and broken exhaust manifold bolt in the passenger-side head?

With two days to get to Cheap Truck Challenge, I had to make an executive decision: Stay home with my broken truck (like a normal 16-year-old would) or drag something else out of the barn to fix up and take? I cheated and fixed up an old Jeep I had languishing in the corner, deciding the big Ferd problem will get addressed after I returned from CTC. 🚗

WHERE THE MONEY WENT

VEHICLE PURCHASE	\$1,500.00
Budget	\$2,015.00
Remaining.....	\$515.00

MODIFICATIONS

Steel for rock slider.....	\$225.00
General Grabber tires, mounted	\$806.00
Detroit locker installed at 4Wheel Parts (but never installed)	\$1,029.00

TOTAL	\$2,060.00
Budget	\$2,015.00
Remaining.....	-\$45.00

SOURCES

DAYSTAR
800.595.7659
daystarweb.com

EATON PERFORMANCE/DETROIT LOCKER
eaton.com
eaton.com/Eaton/Products/Services/Vehicle/Differentials/detroit-locker

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BY Joe Fernandez

PHOTOGRAPHY JOE FERNANDEZ, ROB PETERSEN, AND BRIAN SUMNER

LAST YEAR ROB PETERSON entered his V-8 Jeep Grand Cherokee, a leather luxury wagon, in the Cheap Truck Challenge (CTC). Complete with linked suspension, an overdrive automatic transmission, and modern comforts, Rob's ZJ was the pinnacle of technology circa 1995. This year Rob invited me to join Team Roblem and

we went back to basics with an entry featuring none of the above.

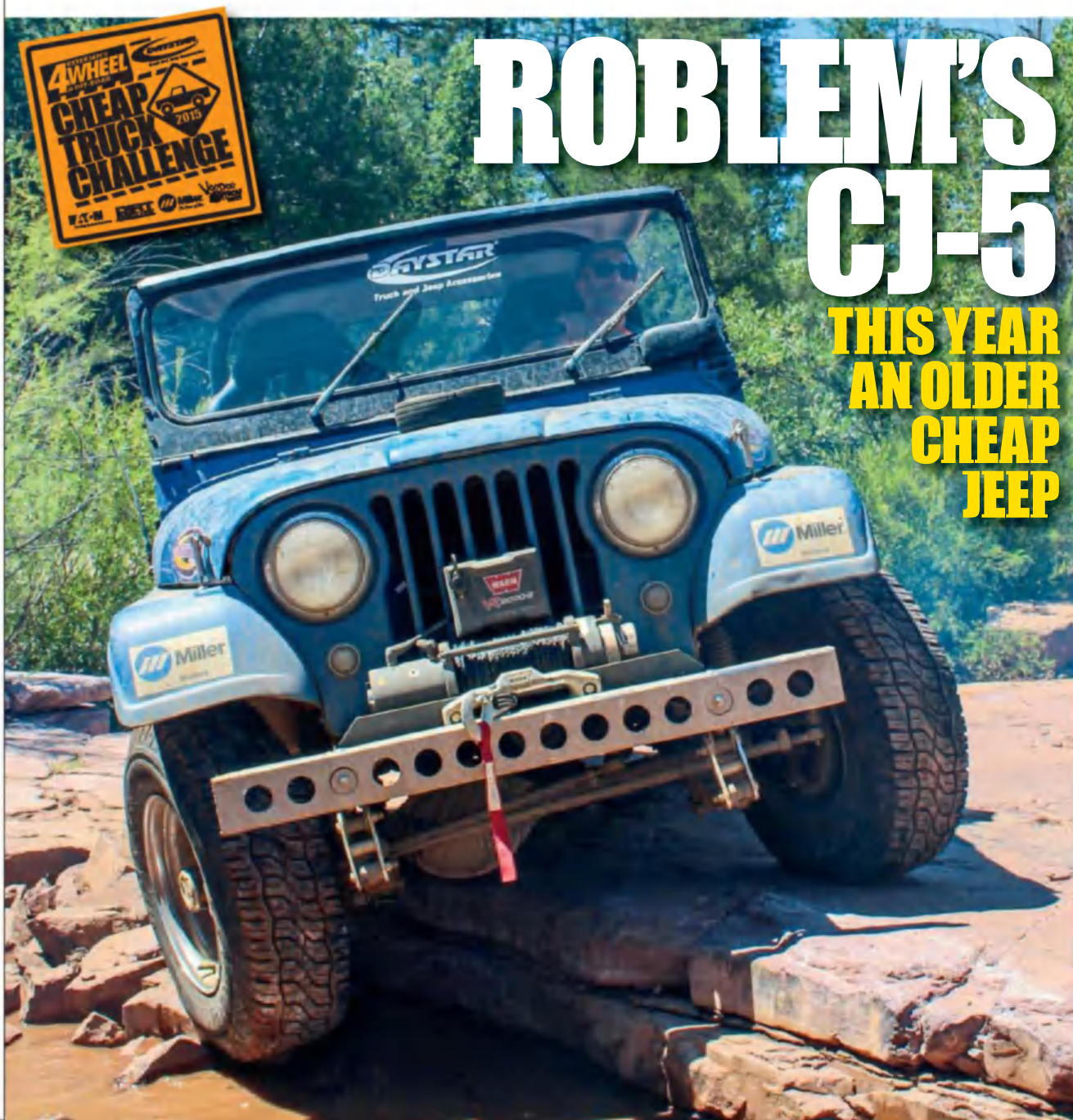
For the 2015 challenge our budget of \$2,015 got us behind the wheel of a 1960 Jeep CJ-5 with four shifters sticking through the floor, three pedals, two working gauges, and a one-barrel carburetor atop a tired four-banger. What started as a Craigslist link sent to Rob in jest of his love-hate relationship with Jeeps turned into the most entertainingly nostalgic time either of us had experienced in years.

This little gem had great potential. It featured a stock drivetrain, Warn over-

drive, a rust-free body, and 30-inch all-terrain tires. The small aftermarket steering wheel, goofy auto parts store racing seats, and aftermarket dash told us that someone had spent a little coin on this Jeep, but otherwise it looked unmolested. Unfortunately our two working gauges told us we had low oil pressure when warm and would overheat if we attempted to keep up with freeway traffic. Not the best for an overland adventure, but driving the Jeep around town we could not keep a smile off our face and were ready to face adversity.

ROBLEM'S CJ-5

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1



2



4



3



5

1 Our Jeep came to us idling poorly and bogging under any load, so our first mission was to give our little F-head a tune-up. After a good carb rebuild, ignition coil, plugs, wires, distributor cap and rotor, and an adjustment to the points, it had a decent idle and some pep was restored with only \$100 gone from our upgrade budget. A new water pump and radiator hoses were installed and a quick radiator flush done to try and overcome the Jeep's freeway overheating issues, but it turned out our issue was more serious than we thought. With the omission of creature comforts comes a level of simplicity seemingly designed to allow total dismantling of the vehicle with a pocket multitool, meaning extra tools were not really needed. Our Jeep is a joy to work on, and we had the confidence to fix almost anything in a pinch.

2 After driving our CJ-5 on the street we noticed our suspension could use a little refresher. We installed fresh bushings from Daystar's Super Kit; all the bushings and sleeves we could want were included. A handheld propane torch and small hacksaw were indispensable in getting the 55-year-old bonded bushings out. We used caution and the torch to burn out the original rubber, then hacksawed a single groove through the outer sleeve to get it to come out of the housing. We also wanted to upgrade from our stock

shackles for a little lift. We went with Daystar's 1/2-inch lift shackle, giving us the clearance we wanted with the 30-inch tires—and the shackles came with new bolts!

3 Knowing our CJ-5 had small axles, we chose to leave them without traction-aiding devices and go with a self-recovery winch from Warn. Our Warn VR8000-S is plenty strong to pull us out of any sticky situation, and the synthetic line keeps the weight down on our tired little four-cylinder Jeep. The VR8000-S is a winch we can count on with high-quality synthetic line and does not kill our budget.

4 We chose to go with a universal mounting plate from Warn (PN 60368) to keep the awesome bumper that came with the Jeep and mount our winch. The winch plate was a perfect width for the frametrails and posed no issue installing with the stock steering setup on our early CJ. We welded our winch plate directly to the top of our frametrails with a Miller welder at our wheeling buddy's house. It is always important to be sure to have a secure ground, clean welding surfaces, and proper safety gear to produce the best welds.

5 When you're choosing the right rig, sometimes it is as simple as looking at what your friends are driving. While it is cool to be unique,

there is something to be said for having a rig with similar parts and tool requirements. For us, knowing that Editor Fred Williams would bring along his flatfender, which shares most of the same drivetrain components, gave us peace of mind. We knew we could share parts and tools if need be. And while we carried some spare steering parts, he carried a spare tire. This is a good lesson for the beginning off-roader: Build the same or similar rig as your wheeling buddies.

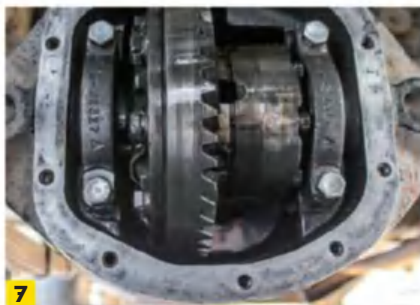
6 Grabbing the steering wheel in our CJ let us know our original steering components could use replacing. We have the stock bell-crank-style steering and would like to swap to crossover in the future. While a friend turned the steering wheel side to side, we noticed the play was coming from the worn-out tie-rod ends at the steering knuckles. We found direct replacement steering links with tie rod ends from Omix-ADA that were within our budget. Always be sure to assemble your steering links with an appropriate amount of antiseize.

7 Team Roblem wanted to keep this build simple and on a budget as if we were wide-eyed 16-year-olds again. As most off-road enthusiasts are aware, adding traction devices to your axles is one of the best upgrades you can do to keep yourself out of trouble, but with that upgrade comes increased drivetrain stress. With our 55-year-old Dana 27 front and Dana 44 rear differentials, we did not want to risk breakage on the trail. We chose to spend our money on recovery gear. After locking in our front Warn hubs and trying to turn our much too small steering wheel, we noticed something was not right. It was very difficult to make the tires point where we wanted to go when in 4-wheel drive on a hard surface. Our first trip in the rocks revealed magic traction and a few jokes at our expense, such as, "Is there a locker in there or is it broken?" Upon returning from CTC we pulled the cover and found a Dana Powr-Lok limited slip. Great surprise for us! 🎉

NOW WHAT?

Our little Jeep proved itself to be a blast, even with its share of issues, and Rob plans to keep it that way. A reproduction steering wheel of larger diameter to help turn with the limited slip, some more appropriate vintage racing seats, and an original dash will give this Jeep the classic NORRA racer look Rob is going for. No classic racer project is complete without a rumble coming from under the hood, especially when the stock four-cylinder is not long for this world (did we mention we spent no less than a dozen trips under the hood during CTC?), and someday this one will rumble to the sound of a small-block Ford adapted to the T-90 transmission. With the addition of big power, we're going to add front disc brakes to keep everything under control while racing off into the sunset.

“Our Jeep came to us idling poorly and bogging under any load, so our first mission was a tune-up”



WHERE THE MONEY WENT

VEHICLE PURCHASE	\$1,500.00
Budget	\$2,015.00
Remaining.....	\$515.00

MODIFICATIONS

Tune-up	\$100.00
Cooling system	\$5000
Winch	\$749.00
Mounting plate	\$100.00
Daystar SuperKit	\$806.00
Daystar shackles	154.00
Steering Omix-ADA	\$100.00
Spare fluids, points, etc.	\$75.00

TOTAL	\$1,443.00
Budget	\$2,015.00
Remaining.....	\$572.00

SOURCES

DAYSTAR
800.595.7659
daystarweb.com

MILLER ELECTRIC WELDERS
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OMIX-ADA
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A CHEAP & NIMBLE KOREAN 4X4

By Verne Simons

PHOTOGRAPHY BRIAN SUMNER, HARRY WAGNER, AND VERNE SIMONS

AFTER LAST YEAR'S CHEAP Truck Challenge and all the work I had to do to get my 1975 International Harvester 150 drivable ("As We Say, Not As We Do," Jan. 2015), I swore that I would get a running and driving 4x4 for the next CTC. In case you missed it, I tried to fix the IH's engine, pulled it, reinstalled it, then pulled it again, and finally did an engine swap. That truck was a total pain. I also did some fairly major rewiring to the truck, rebuilt most of the steering system, rebuilt the front brakes, swapped in a transmission, and did more bodywork than I would have liked. I had a cool, yet still unreliable truck that, despite my

time and efforts, still needed a ton of work and was beyond the normal kid's budget and know-how.

I've always liked small rigs, but the popular 4x4 micro-rigs like the flatfender Willys Jeeps and Suzuki Samurais are a bit hard to find for under \$2,015 unless they need lots of work (read: are not running and driving). I kept my eyes peeled, and that's when I noticed a high-mileage (171,000) two-door 4x4 Kia Sportage for sale in my area. This Korean 4x4 has flown under the radar for years, but with a five-speed manual transmission and a 2.0L dual overhead cam engine, it was a possible CTC contender. Plus it's a tiny 4x4, making it fit my known preference.

This particular truck (if you can call it that) has a few dings and dents and the top was damaged by sun and age, but the asking price was fair (if not great) and it met my number one criterion: It already ran and

drove. Stopping, however, wasn't as easy as going. There was something wrong with the brakes; they worked, but not well. And someone had removed the front seatbelts. Questionable brakes and no seatbelts. What could possibly go wrong?

The seller had spent some time and money adding new tires and a new catalytic converter. He claimed that he wanted to keep the Kia but had other projects that he would rather spend the time and money on. Sounds familiar. After a quick test drive I handed him the cash. The truck was quick and I could tell that it had a pretty low First gear for crawling. I now had a cheap side-by-side fighter for a fraction of the cost of a new or used four-seater UTV. Also, I can drive the Kia down the road or highway to my next adventure. I'll take that as a win-win. I decided to call the Kia "Kimchee" after Korean pickled cabbage. Why? Well, why not?

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1



3



2



4



5

1 Diagnosing the Kia's braking issues, I started by installing a new master cylinder that came with the truck from the previous owner. When that didn't solve the issue I pulled the front brakes apart only to find that the slide pins for the brake calipers were frozen in place. The situation was so bad that I had to drill holes and pound the slide pins out of the caliper mounting brackets using a big hammer and a drift. I then added new calipers from RockAuto, spending \$47.58 of my modification budget.

2 While brakes were apart I found that the steering tie-rod ends and front ball joints were worn past the point of safety. RockAuto had the Kia covered with right and left tie-rod assemblies, a new idler arm, a factory replacement centerlink, lower ball joints, and upper A-arms, all at

affordable prices. I was now out about \$273 for the steering and suspension parts. Service parts for Kias are pretty darn cheap!

3 Sportages use vacuum actuated front automatic locking hubs from the factory. When you shift the transfer case lever into 4-Hi or 4-Lo, a vacuum motor actuates each of the two front hubs. It's an OK design but can fail after 16 years and 170,000 miles. Warn Industries manufactures manual locking hubs for the Kia Sportage, and at \$260 that's insurance I could afford. The hubs install easily without any special tools.

4 With the Kia safer after new steering, brakes, and a set of aftermarket front seatbelts (\$150) I headed down to Daystar for

a few products. After seeing my little SUV, they decided to prototype a 2-inch Comfort Ride suspension lift for 1993-2004 Kia Sportages. The kit should be available soon and cost about \$199. It will come with front strut spacers, rear coil spacers, and replacement rear shocks.

5 We also added Daystar hood vents (intended for a Jeep Cherokee XJ; PN KJ71052BK, \$129.99) to help the 2.0L four-cylinder run cooler. Also, the hood latch on the Kia did not function so we added a pair of Daystar hoodpins (PN KU71104BK, \$17.97 each or \$35.94 for two).

6 The additional tire clearance from the Daystar lift allowed bigger tires, so I called Discount Tire Direct and ordered the most inexpensive 31/10.50R15, the Nankang N889 Mudstar M/T tires (\$122.97 each, \$620.84 with taxes, certificates for tire repair or replacement, and four valve stems). I had the Mudstars mounted on used \$140 Ford Bronco wheels with obnoxious orange paint for extra flare.

7 The larger tires required fender trimming from the rear of the front wheelwells. I cut off whatever seemed unnecessary and folded and hammered the pinch weld back to create a smooth surface should the tires come in contact after all. After I broke the budget just before CTC 2015 by buying a last-minute \$159.99 replacement radiator, the Kia performed very well and ran cooler.

NOW WHAT?

Kimchee the Kia Sportage performed admirably during Cheap Truck Challenge 2015. If I had any complaints about the truck I'd say that it needs deeper low-range gearing. From the factory it has a low range of right around 2 to 1. I'm going to see if I can stack stock Kia transfer cases if I can find the parts cheap. Locking differentials or at least a spool in the rear axle would be awesome, especially in the rocks and during those entertaining dirt road rally sessions. The rockers and doors after CTC can attest to the fact that some rocker guards would be a good investment for any other Kia owners. I may cut out the damaged rockers and replace them with some rectangular tube that ties to the frame. We will have to see what the future holds for the green Kia, but it was so cheap and fun it probably won't need to find a new owner any time soon.

**"THAT'LL HOLD A CUP-A-JOE.
OR A GALLON
OF YEEHAW!"***



6



7

WHERE THE MONEY WENT

VEHICLE PURCHASE	\$1,500.00
Budget	\$2,015.00
Remaining.....	\$515.00

MODIFICATIONS

Tires	\$620.84
Wheels	\$140.00
Steering parts	\$270.32
Locking hubs	\$260.00
Suspension lift	\$199.99
Calipers	\$47.58
Seatbelts	\$150.00
Hood pins	\$35.94
Hood vents	\$129.99
Battery	\$103.00
Radiator cap	\$5.00
Radiator	\$159.99

TOTAL	\$2,122.65
Budget	\$2,015.00
Remaining.....	-\$107.65

SOURCES

DAYSTAR
800.595.7659
daystarweb.com

**DISCOUNT TIRE
DIRECT**
800.589.6789
discounttiredirect.com

ROCKAUTO
608.661.1376
rockauto.com

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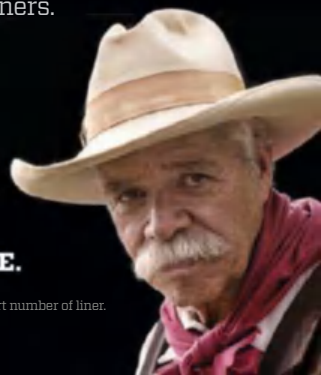
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THE KID'S FIRST TRUCK



A 1964 DODGE POWER WAGON W200

By Rob Bonney

PHOTOGRAPHY JASON DEBUSMAN,
VERNE SIMONS, AND ROB BONNEY

THIS 1964 DODGE HAD BEEN IN the back of my mind for months. I passed by it on a dirt corner not far from my house every day. A For Sale sign kept reappearing every once in a while. Finally, a friend liked it enough that I stopped and examined this "beauty." I had seen the truck a few years prior cruising the local high school parking lot, so I knew it was close to being in running shape. It was a complete Arizona ranch truck, well used and a little abused. The good news was that it had a newer engine that ran, a solid transmission, and tires that held air. The bad news was that it vibrated like a paint shaker with a loose mount and had a knocking noise that sounded like the transfer case was coming

apart. Of course I had to buy it and bring it home, where I explained to my loving wife that it was a perfect first car for a teenage boy. We don't have a teenage boy.

Enter Kasey (also known as The Kid), my buddy's 17-year-old son. What Kasey really needed was some direction in life. A fuel-gulping, tire-squealing truck for picking up girls was a great way to learn direction. Plus, I needed free labor on my Cheap Truck Challenge truck and help around my fabrication shop cleaning, hauling out trash, and so on. As it turns out, the truck needed a lot of free labor. This truck had a bunch of issues, both seen and unseen.

Months went by with The Kid working late into the night after school cleaning the shop and fixing up the Power Wagon in the Arizona summer heat. His dad and I decided the focus of the build would be on maintenance and repair of existing systems, with the minimal amount of modi-

fications required to get the 1964 W200 Power Wagon fit to drive in Phoenix rush hour, because The Kid doesn't need a hot rod yet, just a good working truck. Luckily this truck is simple, and after all the basic working parts were in order and lubed, we had enough budget left over for a power steering conversion and a disc brake upgrade since a little safety never hurts.

We gave advice and watched (aka yelled and pointed fingers) while Kasey rebuilt darn near every component on the truck. By connecting The Kid with some of our old school wheeling pals, we also helped him get help with parts that were well over his head.

By the time Cheap Truck Challenge 2015 rolled around The Kid had learned a lot of basic truck knowledge. He is working his way to owning this truck and becoming a fabricator. Until then he can keep driving the broom around my shop.



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THE KID'S FIRST TRUCK



1 The first issue addressed was the transfer case, as it seemed to be the only real issue at the time. Plus, we could not hear any other issues over the racket it made. The Kid got his first taste of grease, grime, and disappointment when he pulled the transfer case apart using an exploded view he found online and printed out. After repairing the initial problem we realized the knock was gone, but a shift fork grinding noise was now apparent. So The Kid pulled the transfer case back out, saved the good gear oil, welded the forks, and reinstalled it with success. The transfer case was just the beginning. Every little repair we made led to another problem. CTC Rule 1: Patience is key (or, we do it nice because we do it twice).

2 We then decided that power steering and disc brakes were within budget given the proper application of elbow grease and ingenuity. After research at Benchwork Steering Systems, the local steering guru Pat found us a

box that would work and a few junkyard parts to put it all together. A couple of cardboard templates later, The Kid's dad and I'd helped him build a Rob Bonney Fabrication power steering conversion kit (available for other similar Dodge trucks). The Kid had no issues welding with our Miller Electric Millermatic 190 with Auto-Set, a great beginner's machine. CTC Rule 2: If you are going to be cheap, you better be ready to use that elbow grease and know guys with good tools.

3 A disc-brake Dana 44 front axle out of a 1977 Dodge suggested and supplied by Randy at Driven Auto Parts turned out to be a bolt-in swap, with only a few tweaks to the brake lines. CTC Rule 3: Make friends with guys who have used parts.

4 After the axle swap the big Dodge stopped well, steered with ease, and ran like crap. The Kid brought the carb to Joe of 4 Wheelers

Supply, who rebuilt it to a "no promises" status, and it worked great. CTC Rule 4: Grumpy old guys who can rebuild carbs are worth their weight in gold. Get to know them well, and have your dad buy beer for them. It goes a long way.

5 After a quick change of the original points the truck ran great, and the transmission ended up being the only component Kasey had not torn apart, rebuilt, poked with his finger, or cleaned on the entire truck. CTC Rule 5: Learning from old-timers is smart. In this case old guys have already done it, are "frugal" themselves, in addition to being cranky and wise... even when it's your dad and his friend and you're tired of them yelling and waving their arms at you.

6 The true test was leaving Phoenix on a 118-degree day, loaded down for five days of travel, heading up 7,000 feet to the meeting point of CTC 2015. Two-hundred miles later we were standin' on a corner in Winslow, Arizona. The truck built by The Kid had delivered us there safely with zero issues. After days of camping and wheeling over rough terrain, down highways, through a variety of weather conditions, and even extending our trip a bit, we had very few problems. We stayed dry in the rain, cruised down the interstate, ate better and wheeled farther than the Jeeps, then drove home in the same truck. CTC Rule 6: Don't judge a book by its cover. Grumpy old guys, teenagers, and timeworn trucks may have more ability in them than you realize. ☺

NOW WHAT?

The first thing on Kasey's list is a stereo (kids always want a stereo, even though old trucks makes tons of wild sounds to listen to). I suggest a suspension that flexes. Reinforcing the frame will become a requirement with more off-road use because I swear this is the worst-riding truck I've ever ridden in, so a few leaves may be removed from the spring packs. After Kasey left CTC early so he could get to school, we (his dad and I) pretzeled the rear driveshaft when it hit a rock during some technical rockcrawling. Luckily we were able to swap the front driveshaft in the back and we kept right on wheeling...in 2WD. The list of other improvements this truck needs is short. In fact, it just needs to be driven and enjoyed before it rattles apart.

“Old guys have already done it, are ‘frugal’ in addition to being cranky and wise”



WHERE THE MONEY WENT

VEHICLE PURCHASE	\$1,800.00
Budget	\$2,015.00
Remaining	\$215.00

MODIFICATIONS

Transfer case rebuild parts	\$55.00
Carb rebuild (plus a Corona that Dad bought)	\$25.00
Ignition	\$35.00
Power steering swap parts	\$975.00
Front axle, parts	\$650.00
Steel for brackets	\$150.00
Oils, fluids, etc.	\$150.00
Fab consumables	\$125.00
Rob Bonney Fab CNC time	\$150.00

TOTAL	\$2,315.00
Budget	\$2,015.00
Remaining	-\$315.00

SOURCES

BENCHWORK STEERING SYSTEMS
480.946.3992
benchworksteering.com

DRIVEN AUTO PARTS
602.269.3969
drivenautoparts.com

4 WHEELERS SUPPLY & OFF ROAD CENTER
602.273.7195
4wheelers.com

MILLER WELDERS
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OUR '3A IS PLAN B OL' BLUE

BY Fred Williams
PHOTOGRAPHY JOE FERNANDEZ
AND FRED WILLIAMS

WHEN THE FORD F-350 dropped out for my Cheap Truck entry I needed a Plan B, and I found it in my shop. Actually I found it months ago in a junkyard, and it made its way to my shop. This 1950 Willys Jeep CJ-3A isn't perfect, but for a 65-year-old vehicle it's pretty good. Is this a viable option for a kid's first 4x4? That depends on who you ask. My first vehicle was a Jeep CJ-5. Péwé and Verne Simons both also had Jeeps as their first vehicles—a GPW and CJ-7, respectively—so it should be obvious that a Jeep builds character and can lead to a well-suited adulthood in a dying magazine industry.

The problems arise when the youth of today don't realize that this 65-plus-year-old 4x4 is not similar to a modern-day 4x4 besides the steering and driving wheels both being round. There's no radio, no working outlet to charge your phone, no Wi-Fi, no plastic dash, no airbags, not much heat when you want it (but plenty when you don't), dodgy brakes (as in you hit the brakes and start dodging left to right trying to stay straight), and a giant loud gaping hole in the muffler. Actually kids like loud; a quiet muffler would only be for old codgers who can't hear well anyways! Go figure.

A flatfender Jeep is small, requires concentration (no goofing around on Facebook on your Iphoney thingy) while trying to keep this diminutive sport/ute on the asphalt, and can be the best thing you've ever driven in terms of fun. They all came factory with a manual

transmission. Driving one is a dying skill kids need to learn. It helps drivers understand what is happening with their vehicle when they realize that engine rpm and wheel speed correlate. The small size makes a great starter vehicle for off-roading because you can fit in tight trails and follow your friends in their fancy-pants side-by-side UTVs then still drive it to school on Monday.

Also, the lack of a sufficient top means you get to enjoy the great outdoors, and aftermarket tops are really just a way to enjoy the great outdoors from just inside a plastic/vinyl bubble, which means you'll be very popular on sunny days and get to ride by yourself on rainy or snowy days.

All of these attributes will make you a stronger person. Well, these attributes and the lack of power steering and power brakes will make you a stronger person for sure.

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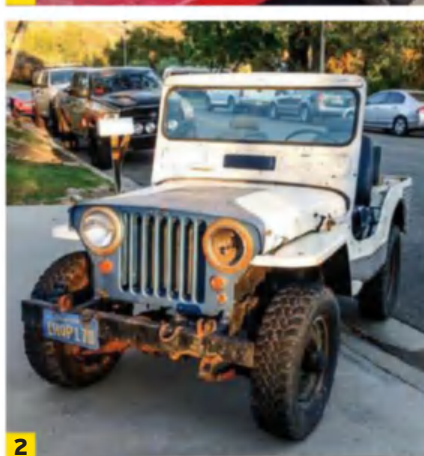
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1 This 1950 Willys CJ-3A flatfender was sitting in a junkyard with a \$1,700 price tag and I brought it home for \$1,300. It didn't run when I bought it, and yet I was enamored by the classic looks of a vehicle built before designers spent time with a giant clay model. Flatfender Jeeps were engineered as tools of war and modified for farming, long before they became recreational trail machines, and yet they started the off-roading pastime when GIs came home and started exploring the woods with surplus military MBs, GPWs (made by Ford) and then civilian Willys CJ-2As.

2 I wanted a flatfender for as long as I could drive, and this junkyard dog would become my first real wheeling flattie. Yes, I have a few others of various stages of modification (such as the Ultimate Summer Camp Jeep from UA 2015) but this '3A is much closer to stock. How-

ever, it was upgraded over the years with a new rusty hard top, a rollbar built of pipe, a Warn (now Saturn) overdrive, and a built Buick V-6.

3 The Buick V-6 was an upgrade from a prior owner over the stock flathead four-cylinder. When I brought it home I found one cylinder full of water, not a good sign. I took it to the home of renowned Jeep guru Rick Péwé, who, along with David Freiburger, helped me get the old dog running again. You can see the whole fiasco on *Dirt Every Day*, episode 33, "Driveway Rescue of a 1950 Jeep CJ-3A," on YouTube. By the end of that episode I had spent roughly \$1,000 on fuel hose, wiring, oils, coolant, a brake master cylinder, five old BFGoodrich tires, brake lines, gas, and gallons upon gallons of PB Blaster that were sprayed liberally on every bolt and down the cylinders to break the engine lose. I gave the hardtop to Péwé for his

"collection." The flattie was christened Ol' Blue because all the drivetrain was painted blue even though the body is white.

4 After we got the engine running (watch the episode if you want to learn more) I brought Ol' Blue home and parked it in the corner. I wanted to do a few major upgrades, starting with a new fuel tank and seats. The factory seats had been replaced long ago by dismal high-back seats, which were not much better. The factory gas tank had rusted apart, and the fuel was coming from a plastic gas can.

5 There are a variety of gas tank options for the Willys CJ owner. Omix-ADA offers a steel replacement tank for flatties for \$211 and a poly tank for \$348. Aqualu, maker of aluminum Jeep bodies, has made replacement tanks for Willys at around \$275. These were all outside

NOW WHAT?

My flatfender was awesome on Cheap Truck. The V-6 ran strong even after some time full of water, and the prior owner's Saginaw manual steering conversion helped it steer, but at the end of the adventure my Spicer 18 transfer case spit bearings out and I took a trailer ride home. I like the Jeep as is, so I'll just fix it, clean up the wiring, and keep driving it. I had added an old Warn off-road light I had lying around because the lights don't work on the Jeep, but I never wired it in, so I will hook that up as well. If it were my only 4x4 I would swap in one-piece rear axleshafts and some custom chromoly front axleshafts, or upgrade the front axle to a Dana 30 and stuff both with selectable Eaton E-lockers. I may also sand off all the paint, not because I don't like the paint but because it's sprayed over an eighth of an inch of Bondo and I don't like Bondo.



my budget. I found a used tank online for \$50, and then I bought a few spare clear plastic fuel filters for \$5 each in case it was full of rust and a bar of soap in case it leaked. I got lucky—the tank didn't leak and wasn't full of rust.

6 I wanted new seats but I couldn't afford Jeeps seats because the frames alone are \$288, and then you still need to add cushion at \$100 each. Side bolsters on seats are great for off-roading as they keep you in place, but are a pain to climb over in a Jeep. My solution was a pair of replacement Toyota forklift seats from an online retailer. These were \$200 each, have built in seatbelts, and have side bolsters, but only on the back so they are easy to get in and out of.

7 All that was left was mounting the seats and replacing the old pipe rollbar. I had a friend bend the main 2-inch-diameter hoop and cut plates to weld it all to. Then I bolted the plates to the tub for the rollbar with massive body washers beneath and built cross-tubes above the in-floor toolbox and underseat gas tank to mount the seats to. I was using material I had lying around my shop, but have found 2x0.120-wall tubing at \$55 for a 20-foot stick, and I figure I used no more than two sticks. If you add in some plate steel as well, I'm at about \$200 for steel. And that leaves me \$350 to cover the cost of cutting, grinding, drilling, and welding for the two downbars and crossbars. That's not very much for a qualified fabrication shop, but it's possible to do that yourself if you have access to the tools. I used my Miller MIG welder because the welds on a rollbar are pretty important as well as the notches, so take your time cutting and grinding those for a tight joint and get an experienced welder to do the job. 🛠️

WHERE THE MONEY WENT

VEHICLE PURCHASE.....	\$1,300.00
Budget	\$2,015.00
Remaining.....	\$715.00

MODIFICATIONS

Tune-up and tires.....	\$1,000.00
Fuel tank and filters	\$65.00
Forklift seats (2)	\$400.00
Rollbar fabrication & materials (est) ..	\$550.00

TOTAL	\$2,015.65
Budget	\$2,015.00
Remaining.....	\$0.00

SOURCES

AQUALU
888.765.6714
aqualu.com

BFGOODRICH TIRES
877.788.8899
bfgoodrichtires.com

DAYSTAR
800.595.7659
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by Harry Wagner

PHOTOGRAPHY BRIAN SUMNER AND HARRY WAGNER

EVERY YEAR WE GET TOGETHER WITH OUR FRIENDS and go beat on budget-built trucks in an event we call the Cheap Truck Challenge. Over the years we have had mud bogs, hillclimbs, rockcrawling, and even a milk jug challenge. While the competition aspect is fun, we aren't competitive enough to really care who wins. Much of the real fun takes place off-camera, when we can just relax and hang out with our friends.

So this year for Cheap Truck Challenge we changed things up. Less emphasis on challenges and more emphasis on camping, having fun, and helping each other out. Think of Cheap Truck Challenge 2015 as a low-buck Ultimate Adventure, one that you could easily duplicate with your friends. The premise is the same: Go wheeling, cover some ground, and sleep in the dirt. This is just the beer version instead of the champagne edition.

This year we started in the town of Winslow, Arizona. From there we hit backroads, stopping along the way to take in the scenery and fix Jeeps. While the trails were not particularly hard,

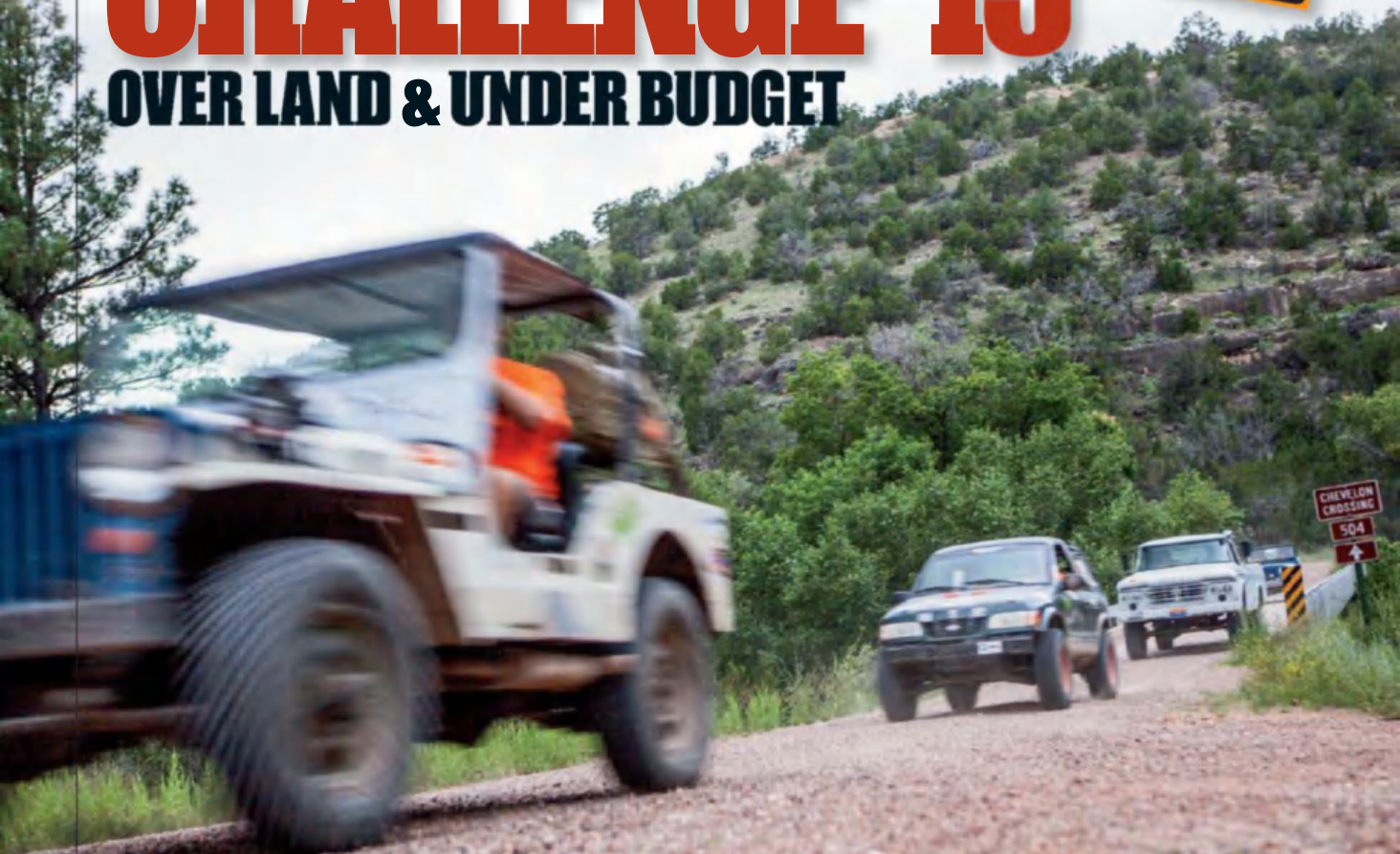
covering miles of washboard road is a great indication of just how reliable a vehicle is. The competitors had to use a map and compass to find their way to a campsite, giving a distinct advantage to the two-man teams. See, it pays to bring a buddy along on the trail. We found a secluded camping spot and made dinner over the fire, swapping stories and jokes well into the night. This is what 4-wheeling is all about.

The next day we continued on towards the Mogollon Rim, with higher elevations and cooler temperatures. In fact, even though we were in Arizona in the middle of August, we got caught in heavy rain. The open-topped Jeeps were at a severe disadvantage to the Dodge (and to a lesser extent the Kia), and all of that gear we brought along got nice and wet. The good thing about rain is that it makes mud, so we found some mud holes to test our cheap trucks and vie for bragging rights. With wet (and now muddy) camping gear we wimped out for the night and decided to get a hotel room and a hot shower.

Refreshed, and perhaps too full of vigor, on the third morning we headed for some rocks. That is when all hell broke loose—or, when we started having fun with our buddies. It is really all just a matter of your perspective.

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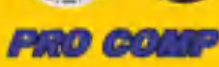
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▲ A CJ-5 with two dudes in it doesn't leave much room for gear. No wonder four-door JKs are so popular. We wonder how families used to use CJ-5s for backcountry exploring.

▲ Verne Simons' Kia Sportage was not much better than the Jeeps in the cargo hauling challenge. Fortunately for him, he was by himself. He actually took all of this gear out of the Kia when we camped and managed to sleep in the back (and the middle, and the front).

▲ The Dodge Power Wagon definitely offered the most storage space. This is a perk for camping, but the larger dimensions limit where you can take a fullsize truck compared to a Jeep.



▲ Cheap Truck Challenge started with each team navigating to their camp for the night. There were no points or winners awarded though, so they worked together to find a great campsite. This was a bigger challenge for the participants than the vehicles; we would wait until later to beat on the trucks.



▲ Joe Fernandez navigated for Rob Peterson in their early CJ-5. Peterson is an Eagle Scout and master of orienteering, so the two had no problem finding their way around the trails. Keeping the Jeep running was a different matter entirely.



▲ The wet conditions were much harder to tolerate in the open-topped Jeeps. The Kia seemed to strike the balance, with an open rear section but with a heater and full doors and windows. The rain also made for muddy trails. The skinny BFGoodrich Mud Terrain tires on Fred Williams' CJ-3A were able to cut through the mud and get to the firm bottom under the water.



⚠ Verne Simons attacked the mud with a vengeance in his Kia Sportage. While there is very little aftermarket support for this pint-sized wheeler, Simons added 31-inch-tall mud tires to his Kia and Daystar is developing a suspension lift. The added traction was key in the mud and rocks.



⚠ Peterson didn't invest in tires on his Jeep. A couple of his old tires looked a little dubious, but all held air until the end. Instead of rubber, Peterson spent his money on a Warn winch to get him out of trouble when the tires stopped grabbing.



⚠ In the morning we made certain that the campfire was completely doused and cool to the touch. With drought conditions in many regions, this cannot be emphasized enough. No one wants to be responsible for starting a forest fire.

⚠ After getting our fill of mud and campfires, it was time to hit the rocks. We love rockcrawling, but nothing will expose the weaknesses of your vehicle more quickly. That is why we saved the rocks for last.



⚠ Despite its small tires, Simons' Kia did an excellent job in the rocks. The light weight and small size offset the lack of gearing and small tires. The biggest issue with the lack of ground clearance was that his rocker panels took a beating.



⚠ Few things are better than setting up camp for the night under the stars. Driving a 4x4, even a cheap one, will allow you to get to remote campsites that cannot be reached by a Prius. Plus, you don't have to listen to the generator in the RV next to you, because no RV is getting to where we camped.

⚠ We enjoyed a dinner cooked over the campfire and there was plenty of food to go around. We aren't sure if we overpack food for camping trips or eat less on the trail, but either way no one ever seems to go hungry.



⚠ The Jeep that started it all! The simple drivetrain and solid axles under Williams' flatfender make it nimble and capable in the rocks. A set of Detroit Lockers would have made it go even farther up the trail.



▲ Williams' day came to an end when his transfer case decided to eat one of the bearings for lunch. The Spicer 18 gave him plenty of notice, but he kept pushing until the Jeep would not go any farther. We expect him to pull the Jeep apart now and have it sit in pieces for the next several years in keeping with tradition.



▲ The hood was up on Peterson's CJ-5 more than it was down. We feel this vehicle offers more potential for wheeling fun than Simons' Kia does, but you would have to spend more money updating it and making it reliable. Without that sort of budget, Peterson was wrenching more than wheeling.



▲ The CJ-5 suffered from fuel delivery issues and did not want to stay running. Was it a clogged carb? Dying fuel pump? Bad gas? We never figured it out, but by the end of the trip the Jeep did not have enough power to move itself up the slightest of inclines.



▲ Simons started to get a little too cocky in his Kia and eventually found himself stuck between two boulders. Rob Bonney was happy to come to his aid with a Voodoo Rope, heckling Simons the entire time. Isn't that what friends are for?

✔ Rob Bonney's Dodge Power Wagon was the biggest vehicle in the test, but it also had the biggest engine, transfer case, and axles. Denting sheetmetal is a bigger concern than breakage when you start with a fullsize truck.



▲ The long wheelbase on Bonney's Power Wagon allowed him to climb steep obstacles that left the Jeeps behind, but that long wheelbase worked against him when his driveline hit a rock and twisted up like taffy.



CHEAP DED TRUCK

Want to see all the Cheap Truck action? **DIRT EVERY DAY** will feature a CTC episode on the Motor Trend Channel on YouTube airing December 22, 2015. Watch all the low-buck action on *Dirt Every Day* presented by 4Wheel Parts.

▲ When the dust settled, the Kia was the last vehicle running. Simons even drove it over 100 miles home on the freeway once Cheap Truck Challenge was over, so if we had to pick a winner we'd suggest you investigate these little Kia as your next cheap wheeler. ☹



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Watch the Mad Maxxis build and mayhem on *Dirt Every Day* online.

PART 1: THIS IS INSANE

MAD MAXXIS OFF-ROAD RUNNER

By Fred Williams

PHOTOGRAPHY FRED WILLIAMS
ILLUSTRATION MURRAY PFAFF

WE LIKE WEIRD 4X4S, and it's time to build our own. Even though we love 4x4s we grew up with TV shows like *Knight Rider* and *The Dukes of Hazard* and movies like *Mad Max* and *The Road Warrior*, so building a crazy off-road muscle car seemed like a great idea. We approached the folks at Maxxis Tire to see if they wanted to be a part of our wild

build with an end-of-the-world theme and giant Maxxis tires, and they jumped on board to help promote their new tire, the Razr MT.

Everyone has seen off-road cars, a cross between trucks and cars (what we refer to as trars). An auto is dropped on a truck frame (usually a K5 Blazer) and then the car becomes a giant lifted mud machine. We wanted something a little different, something that would bring together all our favorite old cars but still be capable off-road. Something with an insane engine, the gnarliest tires we could find, and a look that would scare old ladies. And we wanted to start with a

good old American muscle car.

The muscle car goal isn't easy. Some muscle cars are going up in value so much that our chopping one up to be a wacky wheeler would have been fiscally irresponsible. Plus *Hot Rod* readers would lynch us! But after watching the local classifieds for some time we realized that there were some cars nobody seemed to want. Before you know it we drug home a rusty 1973 Plymouth Road Runner with a dead 318 V-8. All we can say is this thing was on Craigslist for months before we bought it for next to nothing, so don't blame us for what we're about to do to it. You could have saved it yourself if you hate our project. 



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1 We were hunting for a muscle car to build when we found this rusty brown 1973 Plymouth Road Runner. We waited and waited for it to sell, and when it didn't we finally figured no one wanted it and we drug it home. Some may say the 1973 Road Runner is the ugly muscle car, but we're excited about making it our own road warrior (er, off-road warrior). Coincidentally the movie hero Mad Max Rockatansky drove an Australian-only model Ford Falcon, presumably a 1973, so even though ours is a Mopar, it is just about the correct era of muscle.

2 The Road Runner is rusty. The 318 isn't running, and we're not looking to reuse it. Nor will we keep any of the stock drivetrain. So we took the car to Chappelle's Exhaust and Kustoms in El Cajon, California, and began stripping it down for full makeover. Find out the whole plan in Part 2.

3 The new tire coming from Maxxis is the Razr MT. This is the new flagship mud tire and was designed after strong research with the Maxxis off-road race teams. The tread was developed for maximum mud and stone self-cleaning and uses a compound formulated to resist tearing and chunking. The Razr MT also has "dual cord" ply construction and beefed-up sidewall tread for abuse off-road, puncture resistance, and additional traction. We'll be putting at least three on our Off-Road Runner.

SOURCES

**CHAPPELLE'S EXHAUST
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FIRST DRIVE

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1 You're not going to miss the badging on the front or rear of the Rebel. You know it's a Ram. This bold styling gives the truck definite attitude and makes it stand out above your standard Ram 1500. We dig the aftermarket-looking front bumper, and we noted that there is plenty of room back there for a hidden winch. Various plastic parts look like they could easily be removed for a more prerunner look.

2 The interior of the Rebel is also different from the standard Ram 1500. With tire-print-embossed seats and a black headliner, the interior of the truck has a definite feel of the dark side, with a few off-road cues tossed in for good measure. We're still not sure about that knob gear selector or the transfer case buttons. We get the "cowboy Cadillac" aspect of the fancy electronics, but mechanical levers nearly always work whereas knobs feel like more of a suggestion than a control.

3 We are not sure if the Rebel name is more influenced by an iconic orange Dodge that was used extensively off-road or the Rebel Alliance from a certain popular sci-fi film series, but either way the name fits. As far as we are concerned this Rebel can sling dirt in the face of Boss Hog or space dust in the face of Darth Vader. The preproduction Rebels we played with (all Hemi-powered) had plenty of power at hand.

4 The Rebel's air ride suspension and reworked control arm mounting points did everything we wanted them to off-road, and the stance is aggressive. So this is not a Raptor fighter, but the suspension is supple and capable even over decent-sized bumps. We did notice a *thunk*, the kind that seems to accompany air ride suspensions when a wheel reaches full droop.

5 We got to drive the Rebel in Cinder dunes of northern Arizona as well as in the snow

and slick mud. The truck handled all we tossed at it with ease. We would prefer a lever for the transfer case and a lever for the transmission selector, but despite our cries it seems the mechanical lever is going the way of the dodo bird. The Rebel has a bunch of electronic knobs and buttons to control which direction you're headed and at what speed. Having said that, turning the ESP/traction control off (with a button) allowed us to get the truck a little sideways in the cinders and in the mud without the safety nannies kicking in too noticeably. In the loose cinders the traction control kicked in to prevent the truck from developing wheel speed—even if wheel speed was what the driver wanted.



BY Verne Simons

PHOTOGRAPHY BY RAM AND VERNE SIMONS

WITH VEHICLE NAMES like Rubicon, Power Wagon, and Raptor on the tip of many off-roader's tongue, the introduction of another off-road vehicle is going to raise expectations. Sometimes these expectations are a little farfetched and unfounded. After all, getting a showroom-fresh rockcrawler or desert-ready prerunner up to today's fuel economy standards and past the corporate bean counters is no small feat. FCA already does part of this with the amazingly capable Rubicon Wrangler and Ram Power Wagon. But just because Jeep makes the Rubicon and Ford makes the Raptor does not mean everyone and his brother needs one. As it turns out, Ford still sells plenty of FX-4 F-150s and Jeep still sells tons of Sport JK Wranglers.

To those ends, the Ram Rebel is not a Raptor fighter (as some may have expected), but we are more than willing to bet Ram will still sell several. Why? Because the Rebel is pretty close to what the buying public wants and needs: a half-ton 4x4 truck with good gas mileage, big off-road tires, and cool wheels. It's good for work and for weekend runs to the trails or to drag your dirt bike out to the hills.

The Rebel 1500 comes with 33-inch tires, skidplates, a powdercoated steel bumper, an aggressive grille, an off-road-themed interior, 3.92 axle gears, an eight-speed

automatic transmission, an optional rear limited slip, a tuned air ride suspension (with improved off-road geometry), Bilstein shocks on all four corners, and a 1-inch higher ride. The Rebel is available with either a 305hp Pentastar V-6 that makes 359 lb-ft of torque or a 395hp 5.7L Hemi V-8 that makes 410 lb-ft. The Rebel with a Hemi can be optioned with 3.21 gears and as 2WD or 4WD. The Rebel with a Pentastar V-6 is available only as a 4WD. No manual transmission is available.

Both the V-8 and V-6 trucks offer light-duty fuel economy in a heavy-duty-feeling truck, and you know Ram knows heavy-duty. The best part is the Ram Rebel comes with the feel of a lifted and modified truck but, at the end of the day, carries a full factory warranty.

We got a chance to run a few preproduction, late-2015 Rebels through their paces. This might be the perfect combination of refinement and rugged components for that daily driver/work truck that spends the weekend as an off-road warrior. In short, we want one. 

SOURCE

RAM
ramtrucks.com

2015 RAM 1500 REBEL PRICING

● 1500 Rebel 4x2 Crew Cab 5.7L HEMI V-8	\$42,790
● 1500 Rebel 4x4 Crew Cab 3.6L Pentastar V-6	\$44,720
● 1500 Rebel 4x4 Crew Cab 5.7L HEMI V-8	\$46,370



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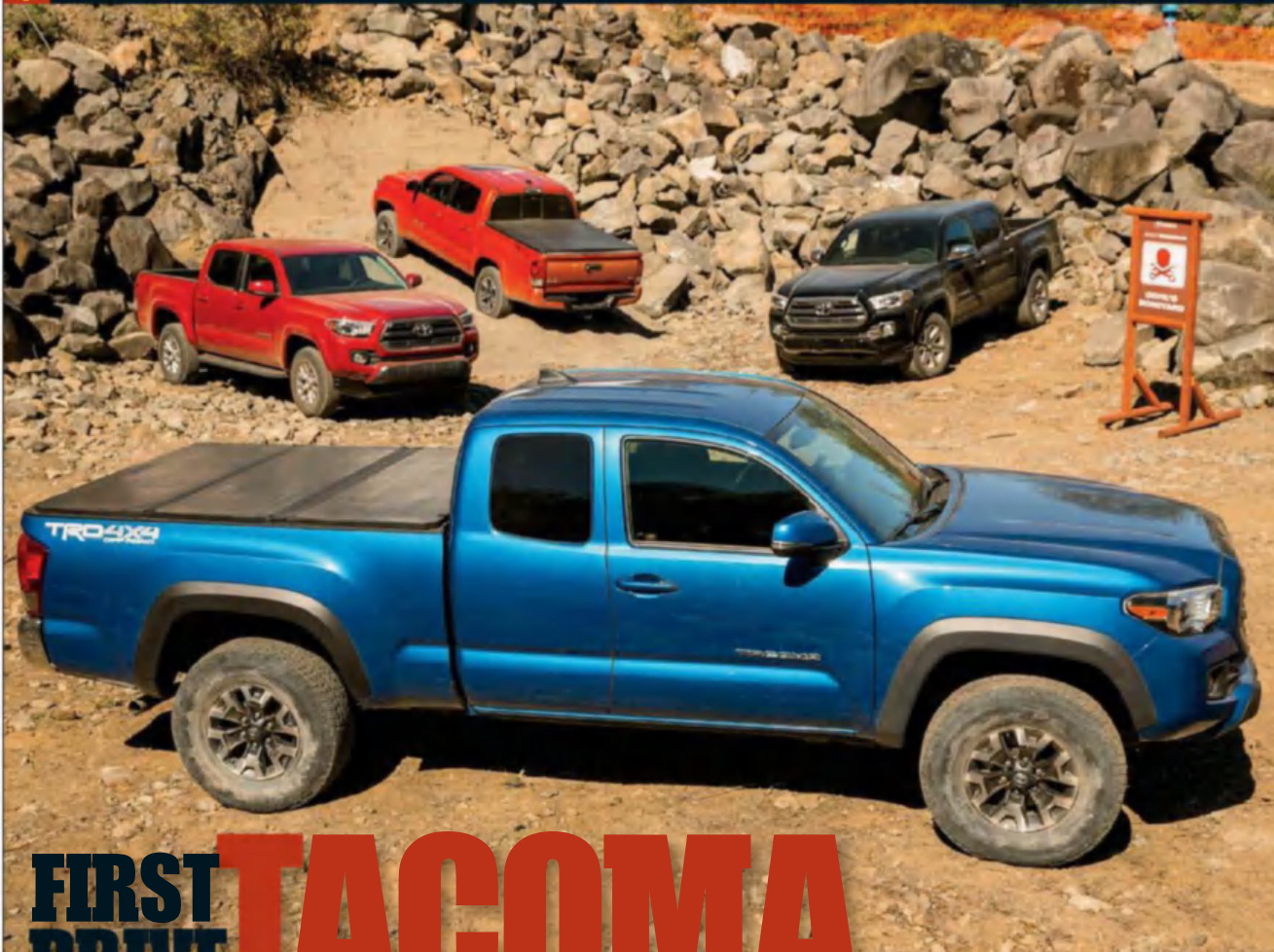


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FIRST DRIVE TACOMA EVOLUTION

WE DRIVE THE REDESIGNED 2016 TACOMA

by Harry Wagner

PHOTOGRAPHY COURTESY OF TOYOTA MOTOR CORPORATION AND HARRY WAGNER

WHEN YOU OWN THE midsize truck market, like Toyota has for the last decade with the Tacoma, there isn't a lot of incentive to change. That said, Toyota prides itself on staying one step ahead of the competition, and the company has certainly taken note of GM's redesigned Chevy Colorado and GMC Sierra. So for 2016 Toyota has introduced a Tacoma that looks very similar to the 2005-2015 model but is tweaked and upgraded in nearly every way.

The heart of the new Tacoma is a 3.5L 60-degree V-6 engine with D-4S dual

injection. This system uses both traditional multiport fuel injectors, and direct injection, to minimize emissions and maximize mileage and power. It sounds complicated, but Toyota has used this technology in the Lexus and Scion lines, so it isn't new, just new to the Tacoma. Despite the reduction in displacement versus the outgoing 4.0L V-6, horsepower is up to 278. Torque has stayed the same (265 lb-ft), but the torque peak is at a relatively high 4,600 rpm. Estimated mileage for the 4WD Tacoma is 17/21/19 mpg with a manual and 18/23/20 for the automatic.

The new engine is backed by a new six-speed automatic transmission, or a new six-speed manual transmission with revised gearing compared to the outgoing manual. The automatic transmission is available with Crawl Control on TRD models, a first for the Tacoma. Introduced in

2008 on the 200 Series Land Cruiser and in 2010 on the Trail Edition 4Runner, Crawl Control is like off-road cruise control. Pick your speed and put your feet on the floor; the vehicle does the rest by sensing wheel slippage and applying individual braking at each corner.

Crawl Control works incredibly well, although it can be a bit loud and clunky, similar to early ABS systems. Like the 4Runner, these controls are housed in the roof above the rearview mirror in a location that seems more fitting for the sunroof controls. It also seems to raise the hackles of Luddites who prefer manual control over their vehicles. Fortunately the TRD Tacoma still has a selectable rear locker, and an all new six-speed manual transmission is available. Toyota's electric locker is now internal to the differential where it is better sealed than compared to

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1 Every manufacturer is dealing with increased fuel mileage requirements. GM has cylinder deactivation, Ford has made its trucks lighter through the use of aluminum cabs, and Ram has eight-speed automatic transmissions and air suspension that automatically lowers at freeway speeds. Now Toyota has introduced D4S technology and its own six-speed automatic.

2 When asked about the possibility of a diesel engine, Toyota stated that the constantly changing emissions requirements in the U.S. make it very difficult to make a business case for putting a diesel engine into the new Tacoma. Fortunately the new 3.5L V-6 makes plenty of power and provides good fuel mileage.

3 After 10 years the Tacoma finally gets a new interior. It is a great improvement, with well-laid-out controls and a 43 percent reduction in noise and vibration. To accomplish this, all seals were enhanced and a multilayer acoustic windshield and sound-absorbing headliner were added. This is the SR5 trim; each package gets its own unique look.

4 Note how the air dam on the new Tacoma is swept back to maximize approach angle while improving fuel economy. Approach angle is 29 degrees, while the TRD Off-Road package does away with the air dam altogether for a 32-degree approach angle.

5 The new Tacoma is available with an 8³/₄-inch rear differential, and an internal electronic locker comes standard on the TRD Off-Road model. The front 8-inch gear is a carryover from the previous Tacoma. Available gear ratios are 3.90 or 4.30, although we expect that it will not be long before the aftermarket has more gear ratios available.

6 Toyota has a reputation for making parts that are common between models, easing component swaps. For example, you can bolt a Supra engine up to a pickup transmission! We hope that the hydroboost used with Crawl Control offers similar swapping abilities for older Tacomas.



3



4

PROS

- Larger rear differential
- Crawl Control
- Hydraulic steering
- Best resale value in the industry

CONS

- Larger dimensions
- Rear C-channel frame
- No regular cab available
- Rear drum brakes

TOP SWAP PARTS

- 8³/₄-inch differential
- Hydroboost

SPECIFICATIONS

GENERAL

Base Price \$25,385

Price as Tested

(TRD Off-Road) \$33,730

ENGINE

Type V-6

Displacement (cc) 3,456

Bore & Stroke (in) 3.70 x 3.27

Compression Ratio 11.8:1

Fuel Req. (octane) Regular (87)

Capacity (gallons) 21.1

SAE Horsepower. 278 @ 6,000 rpm

SAE Torque (lb-ft) 265 @ 4,600 rpm

TRANSMISSION

Type 6-speed auto

Ratios..... First, 3.60:1;

Second, 2.09:1; Third, 1.49:1;

Fourth, 1.00:1; Fifth, 0.69:1;

Sixth, 0.58:1; Reverse, 3.73:1

TRANSFER CASE

Type 2-speed, part-time

Low-Range Ratio 2.57:1

AXLES

Front Diff. Open

Rear Diff Open/electric lock

Hubs None

Ratio 4.30:1

SUSPENSION

Front..... Double wishbone

with coilover-shock;

monotube shock absorbers

Rear..... Solid axle with 2-stage

multileaf springs and staggered,

outboard mounted shocks

STEERING

Type Hydraulic power assist

rack-and-pinion

Lock-to-Lock/Ratio.... 3.64/17.3:1

Turning Circle (ft) 40.6

WHEELS

Size (in) 16x8

Material Aluminum

TIRES

Size P265/70R16

Brand Goodyear Wrangler

All-Terrain Adventure with Kevlar

BRAKES

Front..... 10³/₄-inch ventilated disc

Rear..... 10-inch lead-trailing drum

WEIGHT (lb)

Curb Weight 4,445

Advertised GVWR..... 5,600

Tow Capacity 6,400

Payload Capacity..... 1,120

MILEAGE (mpg)

EPA Estimate..... 18 city/23 hwy

DIMENSIONS (in)

Wheelbase 127.4

Overall Width 75.2

Overall Height 70.8

Front/Rear Track..... 63/63.2

Front Ground Clearance 9.4

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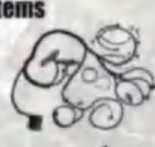


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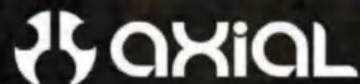
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the previous external solenoid. The locker is wrapped in a larger 8¾-inch differential, which is shared with the overseas Hilux. The larger ring-gear is still housed in a dropout third member, and uses 32-spline axleshafts. We expect this differential to be a popular upgrade to older trucks once they become more available. Another hot swap part is the hydroboost brake system used on Tacomas with Crawl Control.

The Tacoma uses a Triple Tech frame that is boxed in front, reinforced C-channel in the middle, and open C-channel in the rear. Toyota claims this allows the rear suspension to work better, but we interpret that as "the frame is flexing." The open frame does have advantages though; it is lighter, will not trap water that leads to rust, and with the composite bed used on the Tacoma the C-channel is perfectly adequate. Speaking of suspension, Toyota used the same pick-up points on both the front and rear suspension as the previous generation Tacoma. This means that all aftermarket suspension components are compatible, and in fact Toyota asked for input from aftermarket manufacturers when designing the new Tacoma. While the geometry is the same, the shock valving and spring rates have been optimized on the new Tacoma and vary between different models. Stronger ultrahigh-strength steel is also used for the control arms on the new Tacoma, as well as throughout the frame and body to increase strength and shave weight.

Will the changes be enough for Toyota to retain its crown as king of the midsize truck market? Only time will tell, but with every detail tweaked and optimized, it's clear that Toyota is certainly taking the competition seriously. 🍌

BORDER 2 BORDER, COAST 2 COAST

by Fred Williams
PHOTOGRAPHY SKYLER COZAD

FULFILLING BUCKET LIST OFF-ROAD trips is what life is all about, so when we got the opportunity to go on an adventure of our choosing with a new Toyota TRD Pro Tundra we knew that it was time to mark off a goal we've been stewing on. The opportunity arose when Toyota wanted to be a part of an episode of *Dirt Every Day*, the show we do on Motor Trend's YouTube channel. We pitched a road trip from border to border and coast to coast diagonally across the western United States. And since we were taking Toyota's premier off-road fullsize, we had to find plenty of dirt along the way.

The trip took 18 days, during which we saw a variety of terrain and ate, slept, and generally made a giant mess of food wrappers and empty drink cups in that big Inferno Orange truck from Toyota. We also saw amazing changes in landscape and ran over everything from rocks to sand with thousands of miles in between.

A trip like this is a dream for many, but the fact is it's easy to do. Sure, it takes time and money, but the stories you come home with are worth the investment.

WONDERFUL TUNDRAFULL TRIP

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1 We started our trip near Brownsville, Texas, at the Gulf of Mexico (we counted that as “east coast”) and just across the Rio Grande from Mexico. This is not the southernmost point of the lower 48 (that would be the Florida keys), but it is where the easternmost point of land meets the southern border and a beach. The salty gulf water lapped at our BFGs before we headed northwest.

2 We stopped in San Antonio to see where the TRD Pro Tacomas are built, but were not allowed to shoot still photography in the plant (however, there is video on the *Dirt Every Day* episode). What amazed us was how the factory is building both two- and four-wheel-drive Tacomas and Tundras simultaneously. The trucks are built as they are ordered, so the production line is designed to switch between every configuration of truck instantly. You would think they would only build orange 4x4 Tacomas one day then blue two-wheel drive Tundras the next day, but the Toyota factory system allows them to build a variety daily.

3 We were getting hungry, and one of our favorite stops is a small town in the middle of nowhere in New Mexico, known as Pie Town. This town has our much loved dining facility, the Pie-o-Neer pie shop. We stopped and saw the pie lady, had a fresh slice, and hit the road with full bellies.

4 We hit some wet canyons in New Mexico, but the first 4-wheeling occurred in our favorite destination, Moab, Utah. We wanted to show the iconic trails of Moab, and that means Hells Revenge. We took the big Tacoma over the trail and even flew in a guy who had won a contest to be on the trip with us and let him drive up Hells Gate. In all we must have driven Hells Gate a dozen times in the Tacoma to get the perfect shot for the video, and the truck worked flawlessly. Well, maybe the rocker did acquire a little dent.



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BORDER 2 BORDER, COAST 2 COAST

5 North to Idaho and some dune running at St. Anthony's sand dunes was next on our list. The Tundra's TRD suspension was right at home, and the 5.7L V-8 didn't hurt either. Filming for *DED* required multiple versions of bowl carving, dune jumping, and general sand she-nanigans (sandnangigans?), but when you're the driver and all you have to do is have fun while camera guys run around getting their shoes full of sand, it's a good day at the office.



6 *Dirt Every Day* is presented by 4Wheel Parts, which is great because they have stores everywhere. We had visited one in San Antonio for some basic road trip supplies, and the sand dunes is where we needed them. We pulled out our Smittybilt air compressor when one particularly abusive jump knocked a BFG off the rim.



7 The trip was winding us through Oregon, and we wanted to try our hand at fly fishing because we spend so much time with 4x4s that we never learn new hobbies. We found our way to a little stream outside Bend, Oregon, and waded out into the water to see what we could catch. We ate out that night because we didn't catch a thing, and reaffirmed that 4-wheeling is our hobby of choice.

8 We rolled north to the small town of Neah Bay, Washington, for the conclusion of our trip. We hit the Pacific Ocean and could see Canada across the Strait of Juan de Fuca. This type of trip is a great way to see America and do some fun 4-wheeling in a basic stock truck. Maybe next year we'll go from Southern California to the tip of Maine.



SOURCES

BFGOODRICH TIRES
bfgoodrichtires.com

SMITTYBILT
310.762.9944
smittybilt.com

4WHEEL PARTS
800.284.9905
4wheelparts.com

TOYOTA
toyota.com

PIE-O-NEER
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The episode is a
part of the *Dirt Every Day* series presented by
4Wheel Parts on the Motor Trend channel.

**DIRT
EVERY DAY**



BY Verne Simons
PHOTOGRAPHY VERNE SIMONS

BLOWING APART A PERFECTLY good, running, and driving rig with plans to make that rig a lot better can start to seem like a bad idea after the truck has been on jack-stands for weeks (if not months). We bet you are getting tired of seeing images of the large white former police car in our driveway. Lord knows we are tired of seeing it there. The good news

is we've whittled away the project enough to have driven it a few hundred miles now. Getting it running and driving was important for our morale, but also to establish what worked and what didn't.

We are very happy with the Tahoe, although it's not done. Our educated guesstimate of spring rates (with help from Rob Bonney Fabrication) seems to be close to being on point. The suspension works as planned but still needs a bit of tweaking made possible with the help of a few parts from Synergy Manufacturing. The tie-rod end at the pitman arm is

at a very severe angle. It is not safe and needs to be fixed. We'll tackle that with help from Rob Bonney Fabrication and Sam's Offroad. With driveshafts and a slip yoke-eliminator for our NP241C from Tom Wood's Custom Drive Shafts, we got that GM power to the axles and wheels. Last, we get the NP241C shifting with parts from JB Custom Fabrication. We also have to modify the Tahoe's exhaust Y-pipe a touch to clear the front driveshaft.

The SUV is driving, but we still want to build a front bumper and rock sliders, add a winch, regear the axles, and add lockers and maybe a rear sway bar. Once that's done we'll outfit the truck for family adventures. Somehow the build just keeps on going, but we are getting close to enjoying the fruits of our labors.

PART 5: IT'S DRIVING

ROSCO P. DRIVETRAIN





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1 We told you about how we rebuilt the NP241C that would soon find its new home under our Tahoe in Part 4 of Rosco P. Drivetrain. After talking to Tom Wood's Custom Drive Shafts we were ready to tear back into the aluminum box. That's because we didn't realize that Tom Wood's offers a slip-yoke eliminator kit for NP241Cs. Tom Wood's cuts down a factory NP241 shaft and machines the end so a CV flange will fit and supplies an aluminum seal retainer that replaces the factory tailhousing.

2 The kit eliminates the wear-prone slip yoke from the rear output of the transfer case and allows the use of a longer collapsible driveshaft with a double cardan joint on the transfer case end. The longer shaft means less severe angles and a driveshaft that will last longer than the factory part. Installing the slip-yoke eliminator was as easy as the T-case rebuild and should have been done when we did that project, but

we like doing everything twice. Now we can also bolt in a nice steel collapsible rear driveshaft from Tom Wood's Custom Drive Shafts.

3 When we got the AAM 9 1/4 Ram front axle, the factory driveshaft was still attached. Lucky for us the Ram's CV mated to the front output on our NP241C. The only issue was that at full bump our recycled driveshaft was 1 inch too long. A driveshaft that is a too short might be OK, but one that is even a little too long can damage your transfer case. Tom Wood's Custom Drive Shafts shortened (and rebalanced) our front driveshaft after verifying that all the joints and yokes were good to use.

4 With the front driveshaft shortened and installed, the position of the Ram pinion caused the driveshaft to want to share space with one of the catalytic converters. One relief cut above the cat and a new 2 1/4-inch crossover

pipe welded in using our Miller welder, and we had enough room for the driveshaft.

5 As a result of trying to reuse parts we already had on hand, the tie-rod end at the pitman arm (bottom) was just about maxed out at ride height. Any suspension droop or flex would bind and eventually cause failure. On a Ram 2500 this tie-rod end goes into the pitman arm from the top. Our design had the tie-rod end bolting to the pitman arm from the bottom. We found a similar tie-rod end, Moog ES3417T (top), intended for a 1999-2004 2WD Ford F-250, F-350, or Excursion. The taper is the same as our factory 2012 ram tie-rod end with a 14mm 1.5 retaining nut and 1-inch 16 tpi shank. The only difference is the new tie-rod end has a bend that places the ball joint in the correct direction to work with our modified steering system.

6 We ordered up a new pitman arm from Sam's Offroad made of 1-inch mild steel and available with tapered holes or as a blank. We ordered a blank and had Rob Bonney from Rob Bonney Fab and his well-equipped Index mill machine a taper that passes through the pitman arm at about 10 degrees.



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7 Bonney also machined a flat surface for the castle nut to sit on when tight. With the new tie-rod end and the machined taper in the pitman arm, the steering should be happy when flexed or at full bump. We measured the throw of the AAM's knuckles at the tie-rod end mounting point and then figured a point on the new pitman arm that moved about 1/2 inch farther (1/4 inch per side). Our throw at the knuckles was 6 3/4 inches, so the tie-rod end at the pitman arm should move 7 1/4 inches lock to lock. This allows the axle stops to determine the steering throw and not the weaker steering box sector shaft.

8 With 12 inches of travel, getting the Tahoe all flexed out might put undue stress on the steering, the front driveshaft, and even the axle side mounts for the coilovers. To reduce the burden that these parts would see we called up Synergy Manufacturing for a set of the company's 14-inch Quad Wrapped, Ultra Strength limiting straps and limiting strap clevises. These straps are heavy-duty and should last for years under our Tahoe and prevent damage to the rest of the suspension system.

9 With the NP241C assembled for (hopefully) the last time and the driveshafts in place, we addressed how to shift the transfer case

from the driver seat. We tracked down this nifty cable shifter made in the USA by JB Custom Fabrication. These shifters are available for a wide variety of transfer cases, including our NP241C, twin-sticked transfer cases, and doublers. Several different lengths of shifter cables are available. We drilled a hole in the floor of the Tahoe and routed the cable through a Daystar Fire Wall Boot (PN KU20040BK). Then we built a mount out of some steel plate.

10 The 2WD 4L60E tailshaft speed sensor wiring in our Tahoe won't plug into the NP241C's speed sensor because the plug is different. We scavenged this plug at the junkyard and spliced it into our truck's wiring harness. So far we have put about a thousand miles on the truck, and with the original Tahoe front wheel sensors bolted to the 2012 Ram AAM wheel bearings and the above two wiring modifications we have had no computer issues.

11 We finally took the big Tahoe out on a local trail just enough to stretch her legs. We found the Tahoe drove there fine, but the transmission didn't want to shift in 4-lo so we'll have to dig into that. For now we'll keep on spinning wrenches and taking pictures for Part 6 of Rosco P Drivetrain. 

“We finally took the Tahoe out to stretch her legs”

SOURCES

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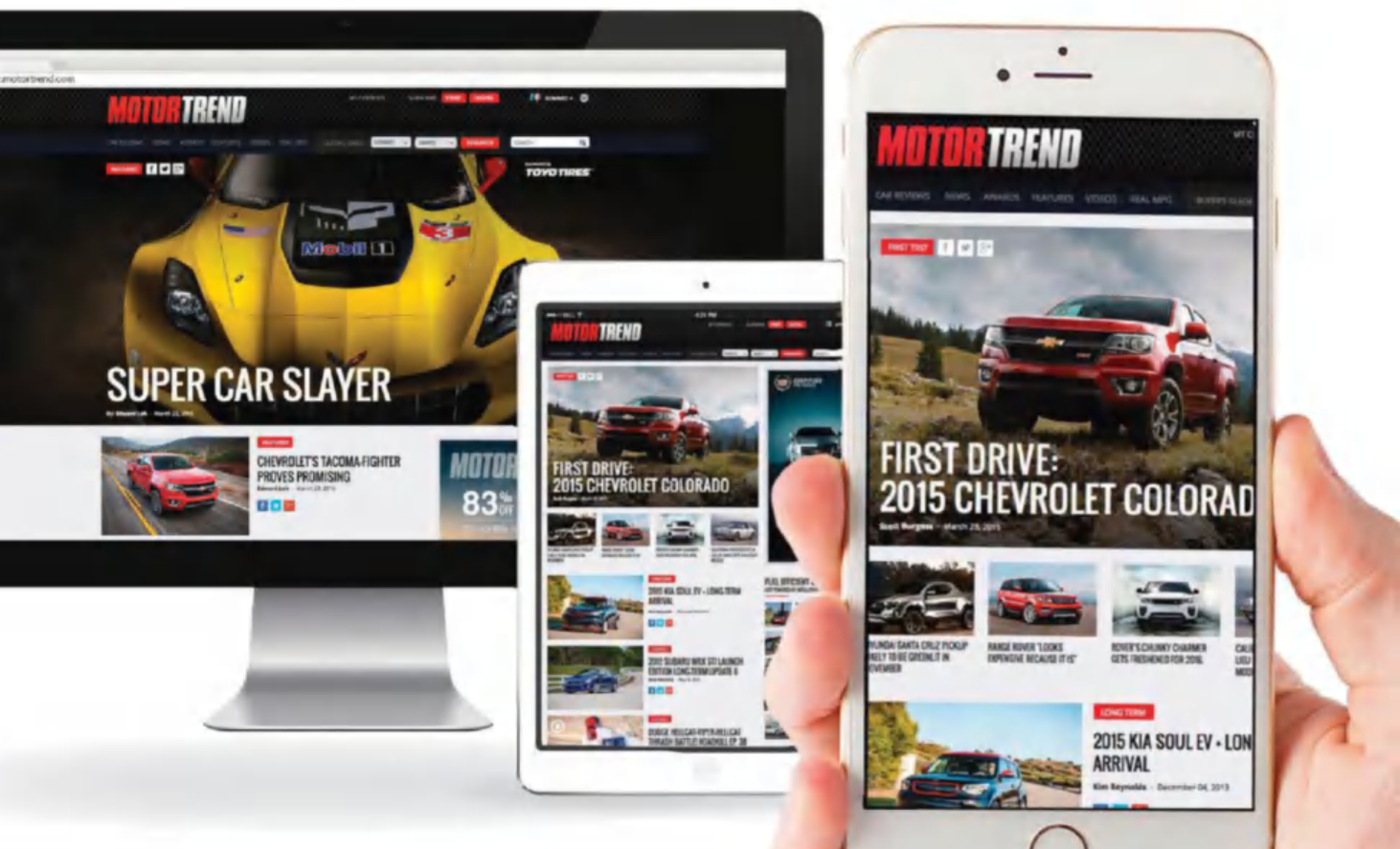
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ULTIMATE SUMMER CAMP JEEP

PART 5: AXLES BUILT FOR SUMMER FUN

BY Fred Williams

PHOTOGRAPHY FRED WILLIAMS

BUILDING A VEHICLE FOR THE Ultimate Adventure requires a healthy engine and that every component downstream from that engine is as strong or stronger so the vehicle can play hard and not break. Our Ultimate Summer Camp Jeep has a powerful supercharged V-8 under the hood, and it has to be able to run down the highway, tip-toe over rocks, and throttle up muddy hills. It also has to haul gear and two dirtbags who are having fun driving like maniacs, and still be reliable.

We've shown you much of the build going on at Synergy Manufacturing, where we dropped the aluminum Aqualu tub on a modified Jeep JK frame and stuffed all our drivetrain underneath. This month we'll dive into those tough Spidertrax Spider-9 axles that have to be strong enough for our little Jeep to peel out with glee and get us home again. The axles we chose follow our rule for the perfect wheeling machine: "Over Axle, Under Engine." Meaning build a set of axles that have no issues holding up to the power of your engine and size of your tires, and you'll spend more time wheeling and less time fixing parts.



1 There are many axle options out there for your 4x4, and this year we returned to Spidertrax to outfit our official UA build vehicle with a pair of their Spider-9 housings. These are fabricated housings designed for strength and light weight. The housings use a dropout-style third member much like a Ford 9-inch and are made of 1/4-inch steel sheetmetal welded to heavy-wall tubing. In our case we used 3 1/2x1 1/4-wall tubing, but the company now offers a massive Pro-Housing with 4-inch tubing as an option for even more strength.

2 Our front Spidertrax axle is actually recycled from the Jeep we built in 2012 that had front and rear steering Spidertrax axles and (you may recall) front and rear Jeep grilles. We swapped the axles out of that Jeep, and the front made it to our current buildup after we cleaned it up. The housing had a few scrapes but was ready for more wheeling fun. The Synergy team soon had it set up with a custom

three-link suspension designed for street and trail performance.

3 The new (nonsteer) rear axle had its four-link suspension mounts added, but we still needed to cut the housing to the desired width and add the mounting cups for the rear full-floating Ultimate Unit Bearings, so we hauled it up to Sandy Cone of Cone Industries. Cone Industries has been working on 9-inch style axles for desert racers longer than most of our readers have been shifting into low range, so he was the expert we wanted setting up the housing. (Plus, Spidertrax recommended him!) We already had the 300M axleshafts ordered based off the Spidertrax axle build spec sheet (it's on their website), so we worked off of the build sheet to know where to cut our housing.

4 The axles come with long tubes so you can build them to your desired length. Cone marked a line around the tube and then cut it

with a portable band saw before grinding the end clean. That pile of rollcage behind Cone is his old 1972 Jeepster Commando he is restoring to Race the NORRA Mexican 1000, a gentleman's race in Baja for retro off-road race cars. Find out more at racejeepster.com.

5 Most Spidertrax axles use double seals inside the housing right by the differential, similar to a standard front axle, where no oil runs into the axletubes. We tested a new rear axle design that put axle seals at the ends of the tubes to allow more oil capacity for cooling and thus fewer issues with burping oil out the diff breather. These small pucks are welded into the housing behind the bearing cups, and seals are added to keep the oil from seeping past.

6 After adding the seal pucks, Cone uses an alignment bar through the unit bearing mounting cups and a setup third member that he designed to make sure the axle is straight



before welding the mounting cups onto the housing. The cups fit tight over the axletube, but an alignment bar is insurance that the housing stays straight and the axleshafts slide in easily.

7 Our differentials this year are Gearworks 10-inch high-pinions with a rear spool and a front Gearworks automatic locker. The 10-inch gears are a 5.43:1 ratio and just barely fit in the Spider-9 housing, but give us additional strength over a more common 9-inch gearset. The high-pinion puts the driveshaft up out of harm's way, and the low gear ratio easily turns our 38-inch Falkens. The third member comes with a Lube Locker gasket for clean, leak-free assembly. Our new 300M Spidertrax axleshafts should laugh off any abuse we can dish out.

8 The new bearing cups with double seals got doused in Eastwood Chassis Black, and then we assembled the big vented disc brakes, Willwood calipers, and Spidertrax Ultimate Unit

Bearings. These unit bearings bolt to the bearing cups (now welded to the axletube) with four bolts, and this allows quick and clean assembly with heat-treated chromoly strength.

9 The assembled rear axles have 35-spline axleshafts running through the Ultimate Unit Bearing. The unit bearings use Timken bearings and are available in a variety of wheel bolt patterns; we chose 8-on-6½. Spidertrax also offers a 40-spline unit bearing if you want even more strength. Note that these unit bearing hubs do not use a removable drive slug or selectable hub. 

SOURCES

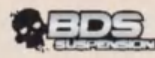
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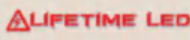
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DO THIS
WITHOUT YOU**



BY Verne Simons
PHOTOGRAPHY 4WOR STAFF

ULTIMATE ADVENTURE IS THE pinnacle of off-road trips (if we do say so ourselves). It tests the mettle of man (or woman), machine, and all its components. The event would not happen without our sponsors and their love and dedication to this sport, and for that we thank them. The event allows our sponsor companies to test their latest and greatest products and

project vehicles, and to give their employees firsthand experience in the rocks, muck, and mire. Lucky for us, all the representatives from the UA sponsors are pretty cool people too, fun to spend time with. That's good because there is nothing like a 20-hour UA day to bring people together (whether they want to or not). The sponsors bring a lot to the table, including access to cool new parts, years of in-depth industry knowledge, and the knowledge of how to use their products as designed. The UA is for you, the reader, but it would not be possible without the support of our sponsors.



THE EASTWOOD COMPANY: OFFICIAL TOOL AND WELDER

If you haven't explored The Eastwood Company, you owe it to yourself to do so soon. This company has the automotive hobbyist covered with useful and innovative tools filling its catalogs. Eastwood can help everyone from the hardcore wheeler building his next trail rig to the vehicle restoration guru getting the perfect look. We used plenty of Eastwood's tools and coatings on the Ultimate Summer Camp Jeep. The Eastwood Company CUCV, piloted by VJ Perrin, carried tools and a MIG welder throughout the trip like an on-trail repair facility. We thank the Eastwood Company for all the help and support for UA 2015 and also for allowing us to play with our favorite Louisiana native, who never ceases to entertain.

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BDS: OFFICIAL SUSPENSION

On the Ultimate Adventure, suspension parts get almost no downtime. Trail days lead to flex and incredible forces as these rigs bounce and claw their way up the trails. After a night's rest (assuming suspension parts sleep) we demand the most of these suspension parts as we hurdle down the road directing heavy wheels and tires and plenty of horsepower. You can bet BDS Suspension knows it sells a solid product when the warrantee extends to custom off-road rigs on the Ultimate Adventure. BDS has been with us for years on UA, and the company always brings innovation, knowhow, and solid products. This year BDS not only built and brought one killer Crawlerado, but also brought a support rig and supplied suspension parts for our Summer Camp Jeep Project. BDS's own Carter Reed toiled away on social media to keep the events of UA 2015 in front of our readers on social media. For all that we say thanks, BDS! We can't wait to see what happens next year.

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FALKEN TIRE: OFFICIAL TIRES

It has been hard getting over how well these Falken Tires worked on the trail and road during the Ultimate Adventure. Despite the sloppy mess that we found just about everywhere we went, the Falken WildPeak MTs grabbed and clawed their way to the top without a peep or any unintended deflation. Falken has been dedicating lots of time to testing to be sure that the MTs are some of the best tires out there regardless of what terrain you use them on. Whether we were on mud, rocks, or a combination of muddy rocks, our Falken WildPeak MTs always performed above expectation and made the few other brand tires look silly. Thanks, Falken!

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Shining a light on the road or trail makes keeps things rolling along despite the time of night—or early morning. With rugged and innovative parts, Lifetime LED was a welcome addition to UA 2015. With Lifetime LED lights on several of the vehicles—complete with magnetic-base, cigarette-lighter-plugged utility lights you could place just about anywhere, and handy flashlights—Lifetime LED lit up the dark no matter where light was needed on the UA. Thanks for the opportunity to beat and abuse your products. They took everything we could throw at them, and we hope to keep using them for years. We'll take you up on that LED lifetime warrantee if the need ever arises.

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HI-LIFT JACK: OFFICIAL JACK

Since the first off-landers hit the dirt, 4x4s have been carrying Hi-Lift jacks with them into the middle of nowhere. These tools are useful not only for lifting rigs with flexy suspension but for pulling objects or stuck vehicles. They can be used to straighten parts (and the handle makes a great tie rod sleeve), break beads, push parts back into place, move sheetmetal, and so on. In fact, Hi-Lifts can be used for hundreds of things while you're on the trail. They have saved our bacon more than once. The mechanism that makes these jacks raise and lower is simple and reliable (with some lubrication). This is the kind of tool that matches off-roading well because its uses are only limited by your imagination and what you have at hand. We were proud to have Hi-Lift Jack along for UA 2015 and we know we will keep recommending and using these jacks for years to come.

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Some time ago someone figured out that you could stack transfer case low range boxes together and get more low range choices than that factory single stick or even lower than stock custom gearing offered alone. In the meantime the guys from Offroad Design got the idea to refine it for fullsize and high-horsepower applications. Like a fine wine, this refinement has led to the best in transfer case utility and durability. This apex: the Offroad Design Magnum Box, a super-compact four-speed transfer case system offering 1:1, 2:1, 2.72:1, and 5.33:1 gearing with no fear of breakage. Since its inception we've been abusing Magnum boxes with plenty horsepower, torque, big tires, and gnarly trails, all without failure. This year was no different, with a Magum Box in our hill-killing Ultimate Summer Camp Jeep, BDS's Crawlerado, and ORD's own Big Block Blazer. A passel of other wheelers were using ORD-sourced NP203 and NP205 Doubler parts, not to mention shifters and hard parts. Offroad Design, thanks for all that confidence and gearing.

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1. Publication title: 4-Wheel & Off-Road
2. Publication number: 0162-3214
3. Filing date: 10/01/2015
4. Issue frequency: Monthly
5. Number of issues published annually: 12
6. Annual subscription price: \$18.00
7. Complete mailing address of known office of publication: 261 Madison Avenue, 6th Fl., New York, NY 10016-2303. Contact person: Brian Laboe, (212) 915-4182
8. Complete mailing address of headquarters or general business office of publisher: TEN: The Enthusiast Network, LLC, 831 S. Douglas St., El Segundo, CA 90245
9. Full names and complete mailing address of publisher, editor, and managing editor: Publisher: Steve von Seggern, 1821 E. Dyer Rd., Santa Ana, CA 92705; Editor: Fred Williams, 831 S. Douglas St., El Segundo, CA 90245; Managing Editor: Craig Johnson, 831 S. Douglas St., El Segundo, CA 90245
10. Owner: TEN: The Enthusiast Network, LLC, 831 S. Douglas St., El Segundo, CA 90245
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[X] Has not changed during preceding 12 months
[] Has changed during preceding 12 months
13. Publication title: 4-Wheel & Off-Road
14. Issue date for circulation data below: September 2015
15. Extent and nature of circulation:

	Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
a. Total number of copies	205,185	171,728
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i. Percent paid	96.5%	96.6%

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A 4x4 project is useless without a set of durable axles. Spidertrax does one better by providing super-strong axles that are lightweight for anyone who plans to abuse them but is conscious of the scale. Our Ultimate Summer Camp Jeep sports not one but two totally awesome (and sexy) Spider 9 axle housings. These axles are the axles to have because they are strong like Spider-Man, so strong that we have to wonder whether they were bitten by a radioactive spider. We never saw the Spidertrax axles shoot out webs for traction, but the Ultimate Unit Bearings laughed off abuse from big tires and the custom Spidertrax axleshafts showed no fear of rocks, muddy climbs under full throttle, or evildoers, so they just might be superheroes. Parts of these axles made it through not only UA 2015 but also UA 2012, Moab for Easter Jeep Safari, and more, without issue. Thanks, Spidertrax, for our superpowered axles!

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SYNERGY MANUFACTURING: OFFICIAL FABRICATOR

Two and a half months. Let that sink in. Two and a half months is all it took for Synergy Manufacturing to take our Ultimate Summer Jeep from idea to completion. Sure, there was some help, like that beautiful aluminum body tub, but to build a vehicle out of parts that are not supposed to go together in that amount of time is unheard of. A heck of a fabrication team is only part of what makes Synergy amazing for this. Synergy makes and stocks a huge amount of useful parts for any and all off-road fabrication. Not to mention that the Ultimate Summer Camp Jeep had very few issues during the trip despite the tight deadlines. For that we send out hardy and heartfelt thanks to Synergy. Well done!

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VOODOO OFFROAD: OFFICIAL TOWSTRAP

Dear VooDoo Offroad, we are not sure what kind of voodoo you do when you're making your ropes, but please keep it up. It seems to be working. VooDoo Offroad is a new name to the off-road game, but the company's bright green VooDoo ropes have helped more than one adventurer on the UA get out of a stuck with ease. Even when that wheeler is getting tugged by a smaller UA rig. VooDoo uses kinetic energy to help overcome the forces that keep your stuck rig stuck. The stretch helps with the recovery and smooths out any jarring from the yank. That's cool with us. We are happy to say thank you, VooDoo Offroad, for the yank (and the more durable rope bag). We needed that.

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In many communities there is a "fixer." You know, a guy who can get stuff. The UA 2015 fixer was our official retailer, Offroad Power Products. OPP has it all, and if they don't, you can bet they can get it. OPP not only supplied parts for many of this year's UA project vehicles but also helped getting Ultimate Adventure DVDs into the greasy hands of our readers. Plus, the guys from OPP are just a ton of fun to hang out with. This year Cooper "Smash" Rasmussen and Mike "the Ninja" Kim from OPP brought out a classic 4x4, a Jeep Cherokee Chief. The Chief is a great platform for OPP to show how simple yet effective a vehicle can be when all the right OPP parts are assembled in just the right way. Thanks, OPP, for all your help, inspiration, and entertainment!

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ICON 2015 F-150 2½-INCH KIT

Icon's new mild suspension system is engineered for the F-150's aluminum-bodied ride characteristics. The system is based on adjustable/rebuildable Icon shocks: 2½-inch coilovers with Eibach springs in the front and 2-inch-diameter rear monotubes. Remote reservoirs are optional. Up to 2½ inches of lift is possible. The front also uses replacement upper control arms with uniballs. Icon claims a 12.5 percent increase in wheel travel and improved ride quality.

INFORMATION: Icon Vehicle Dynamics, 951.689.4266, iconvehicledynamics.com.



CENTRAL PNEUMATIC EARTHQUAKE AIR IMPACT WRENCH

This professional-class pneumatic impact wrench from Central Pneumatic delivers more power with better weight distribution, lighter materials, and a more compact housing compared to competition that costs much more. Premium-grade components with close tolerances give this tool a longer lifespan than conventional air wrenches. And with less vibration, you can work longer with this durable impact wrench. **INFORMATION:** Harbor Freight Tools, 800.423.2567, harborfreight.com.



C&R RACING CUSTOM RADIATORS

C&R makes radiators to spec to help accommodate custom needs such as engine swaps and high-performance competition vehicles. C&R designs the radiator for the application with the optimal tube size, spacing, crossflow or downflow style, pressure rating, and fin density. Furnace-brazed cores are used (no epoxy) for strength and weight savings. Fittings are made from CNC-machined billet and are TIG-welded. **INFORMATION:** C&R Racing, 317.293.4100, crracing.com.

JBA TOYOTA UCAS

JBA Offroad expands its Toyota 4x4 product line with new upper control arms for lifted late-model Tacomas, 4Runners, and FJ Cruisers. These A-arms are side-specifically contoured to clear the springs at full suspension droop, a common problem with the factory control arms. JBA also engineered the arms to increase articulation: the greaseable/replaceable ball joints are designed to handle up to 40 degrees of off-centerline functionality during uptravel and 50 degrees during downtravel. The arms are said to be compatible with all aftermarket lift kits. **INFORMATION:** JBA Offroad, 855.533.7437, jbaoffroad.com.



CORBEAU RETRACTABLE HARNESSES

The Corbeau three-point retractable harness belts are intended to provide improved protection and allow some mobility for looking over one's shoulder, reaching to the dashboard, and so forth. Corbeau uses an inertia reel to allow the harness belt to function like OE belts. Sudden movements will cause the harness to lock. An override knob changes the system to fulltime harness mode for maximum off-road safety. MSRP is \$99 per belt. A variety of colors is available. **INFORMATION:** Corbeau, 801.255.3737, corbeau.com.



HTP MICROCUT 301 PLASMA CUTTER

The HTP MicroCut 301 Plasma Cutter makes cutting easy for any project. This remarkable 14-pound unit can quality-cut $\frac{3}{16}$ -inch-thick steel and severe-cut $\frac{3}{8}$ -inch-thick steel. Infinite amperage adjustment allows the MicroCut 301 to be dialed down to 5 amps for intricate cutting on light-gauge steel and then cranked up to 25 amps for heavier work. It cuts any material that conducts electricity—steel, stainless steel, aluminum, copper, or brass—and you can even start the arc through painted surfaces or rust. **INFORMATION:** HTP America, 800.USA.WELD, usaweld.com.



AMP RESEARCH POWERSTEP XL

For taller trucks, the new AMP Research PowerStep XL model features 3 more inches of drop than the standard PowerStep. This extra drop comes from an integrated aluminum rail that also offers additional durability when the steps are retracted. Construction is 6063 marine-grade aluminum with a corrosion-resistant black textured coating. The rails have a 600-pound capacity and self-lubricating bushings for all-weather performance. Wiring has been simplified and uses the vehicle's OBD-II port. The PowerStep XL also features integrated LED lights. Made in the USA, the kit is covered by a five-year/60,000-mile limited warranty. **INFORMATION:** AMP Research, 949.221.0023, amp-research.com.



SKYJACKER 2015 F-150 LIFTS

Skyjacker now offers a 2-inch leveling kit and 4½- and 6-inch lift kits for the 2015 Ford F-150. The leveling kit features front spacers. The taller kits utilize high-clearance cross-members and CNC-machined steering knuckles that are engineered to maintain OE alignment specs. The rear lift features ductile-iron lift blocks and Hydro 7000 shocks. Both kits require 20-inch wheels and allow the use of 35-inch tires; the 6-inch lift kit can be used with 37s but can require slight trimming of the inner fender plastic liner. The new kits are designed for models equipped with factory Electronic Stability Control. **INFORMATION:** Skyjacker, 318.388.0816, skyjacker.com.



G2 ALL-METAL HUBS

G2 Axle & Gear introduces all-metal locking hubs for Dana 44 and Dana 60 axles. For improved durability over OE, the hub bodies are formed from nodular iron, and the lock ring is heat-treated to ensure that the hubs stay engaged once they are turned to the lock position. The cap is made from corrosion-resistant anodized aluminum. G2 backs these hubs with a lifetime warranty. **INFORMATION:** G2 Axle & Gear, 310.900.2687, g2axle.com.



MORE TRACKER TECH

Q I have a 2001 Chevy Tracker ZR2. My plan is to add a 2-inch suspension lift and a 2-inch body. Will I be able to clear larger tires like 31s or 32s on a 15-inch rim?

DAVE P.

Via nuts@4wheeloffroad.com

A If you haven't yet, you need to check out the build former staffer and frequent contributor Harry Wagner did on a 1999 Tracker, which is basically the same as your 2001. You can check it out on our Four Wheeler network at fourwheeler.com/project-vehicles/1309-two-day-1999-chevy-tracker-build/. With that build, Wagner added a 2-inch suspension lift and trimmed a lot of sheetmetal to clear some 31-inch-tall tires on 16-inch wheels, but you could easily use 15-inch wheels instead. You could combine the suspension lift with a 2-inch body lift and trim a lot less sheetmetal, but most likely trimming would still be needed. I'd lean more toward trimming than the body lift, but that's largely due to personal preference. Throw some low-range gears and maybe a locker at your Tracker and you'll have the ultimate budget wheeler.

SHIFTY LINKAGE

Q I have a 1998 Jeep Wrangler with a 4.0L, automatic transmission, and an NP231 transfer case. I went 4-wheeling last weekend and must have hit something because when I went to shift it out of low range, nothing happened! It's like the lever isn't connected to anything anymore and the Jeep is now stuck in low range. The Jeep has a mild lift, but other than that it's stock. How do I get it back into two-wheel drive? Help!

RODNEY B.

Via nuts@4wheeloffroad.com

A More than likely one of the rods popped off in the linkage assembly between the shift lever on the transfer case and the lever on the floor. The transfer case shift linkage on a TJ isn't the best design in the world. A pivoting shaft is mounted to the underside of the body at one end and the transmission at the other, so even small changes in the position of the transmission caused by a worn tranny mount or a hit to the belly pan can throw the whole linkage assembly out of whack. The situation is aggravated if there's a drop kit installed in the belly pan to alleviate driveline angles, and your Jeep probably has one considering that it has a lift kit. Most transfer case drop kits come with a bracket to correct the angle of the shift linkage, but it's kind of a pain to install, so it often gets left out or is installed incorrectly. If this is the case, it usually only takes one good 4-wheeling trip for the linkage to come apart.

Chock the tires on your Jeep and crawl underneath. If you look up above the front driveshaft you should be able to see most of the transfer case shift linkage. Look to see if one of the relatively thin metal linkage rods has popped loose; if you find one just hanging on one end, it should be pretty easy to tell where it's supposed to be hooked up. There are also supposed to be rubber grommets on each end of the rods where they attach to the rest of the linkage, and if any of those grommets are missing or damaged, the linkage will fall right back apart. If your Jeep is equipped with a transfer case drop kit (spacers between the bottom of the frame and the belly pan), check to make sure there's a bracket in place that corrects the position of the pivoting shaft that runs between the tranny and the body. If that shaft is not fairly level with the Jeep on flat ground, then the necessary bracket is missing or installed incorrectly, or it's possible that you bent the belly pan up on your trip. Address this as necessary, or better yet, use this as an excuse to upgrade to a slip-yoke eliminator kit and ditch the drop kit entirely. Make sure you keep the tires chocked and the e-brake on at all times while you're messing with the linkage, as you could accidentally pop the transfer case into neutral.

WANDERING BINDER

Q I have a 1956 IH ¾-ton 4x4 (factory made, not a conversion) that was converted to ¾-ton 1975 Dodge axles in the '80s. The man that did the conversion kept the original spring packs, which are

1¾ inches wide, and adapted them to the Dodge 2½-inch spring pads by use of a ¼-inch shim on either side of the spring pack. This is a good thing because it got rid of the orphan old six-bolt 1-ton wheels and gave me common eight-lug wheels instead. Unfortunately he neglected to give the front axle proper (or even decent) caster. I measure the caster at about 1.5 positive degrees, which by my research should be 3.5 to 5 degrees. There's a bit of wandering at common road speeds. I chase the steering wheel back and forth as the wheels find their own path through life.

Several websites have given me clues where the caster should be to track properly, and the wheel alignment shop agrees. The amount I've found is 4 degrees minimum, 6 max, based on whether it's a Dana 44 or Dana 60. Mine's a 44. There are a few 1¾-inch-wide shims but a much wider selection in 2½ inch wide shims. I've found some steel 2½-inch, 4-degree shims, and there is room under the above mentioned spring side shims that a 2½-inch-wide shim could fit, either to the bottom of the spring pack or to the top of the mounting pad of the axle. Essentially the same place, but removable versus not.



My problem: Do I weld the shim to the mounting pad, or add it to the bottom of the spring pack? The website selling the shims suggests either as a possibility. I'm leaning toward the spring pack, but is there a valid reason to put it on the mounting pad? If they go on the spring pack, the pack would get disassembled and inspected/repairs as needed, which may be reason enough to put them there. My thinking is, in my case, the spring pack is the better option. I'm not planning on doing anything wild enough to spit the shims out. You wouldn't believe the number of positive comments I've had since I bought it! But the old girl has her issues to fix.

MIKE B.

Via nuts@4wheeloffroad.com

A You are on the right track to resolving the wandering issues on your classic corn binder. You are also right to prefer steel degree shims over aluminum ones, as aluminum shims tend to crack and work loose. The 1¾-inch-wide springs are a little unusual, so it is not surprising that you haven't had much luck finding shims that are the right width. However, it would be easy enough to just buy 2½-inch-wide shims and cut them down, and I would definitely cut them down to the proper width as opposed to running them full width under the skinny springs.

As for placement, you definitely want to attach the shims to the spring pack. The centering pin in the spring pack needs to engage the hole in the spring pad, and if you were to attach (weld) the shims to the spring pad instead, the centering pins wouldn't have enough engagement. Keep in mind that you are going to need new centering pins when you install the shims on the spring pack.

While it sounds like the way in which the previous owner adapted the skinny springs to the 2½-inch-wide Dodge spring pads worked, it's less than ideal. What is keeping the spacers in place between the springs and the U-bolts? If the spacers were to work loose, you could have an issue with the springs working loose or getting displaced under heavy cornering forces, and that's something you definitely don't want to happen.

In order to really fix it right, you should strongly consider cutting off the original Dodge spring pads and installing new pads that match the width of the springs. By replacing the spring pads, you kill two birds with one stone: You can set the new spring pads to the proper amount of caster and end up with a safer, stronger spring arrangement for the front suspension.

BINDER SWITCH

Q I have an old family farm 1967 Loadstar 1800 that I use to haul my 1975 CJ-5 around. The headlight switch is bad. The wiring is perfectly fine (you can jump the connector wires to turn on the lights, and so on). Do you know of anyone who has a replacement switch or rebuilds them? This is not the GM-style switch. My '67 has the pretty parking lights under the headlights that come on when the switch is in the second position. Any help would be greatly appreciated.

ZEKE

Via nuts@4wheeloffroad.com

A Cool tow rig! I assume you have already looked around online and come up



empty. While you could probably find a company to rebuild the switch (look around for companies that specialize in the classic car restoration market), it would be far cheaper and easier to retrofit a GM-style headlight switch. I started using the GM switch a couple years after your Loadstar was made. The switches are available at any parts store (they were used in approximately eleven-billion cars and trucks) along with the pigtail you would need to connect to the switch. You'll need to identify the wires and what they do on the original connector, and then hook them up appropriately to new GM connector. GM headlight connector diagrams are also readily available online. You could even get away with using normal spade connectors on the GM switch, but using a proper connector is cleaner and easier to work with should you need to diagnose headlight wiring issues down the road. I'm not familiar with your reference regarding the parking lights coming on with the switch in the second position, but if it's not something the GM switch does, it would be easy enough to wire in a secondary switch to control the parking lights independently if needed.

10-BOLT DILEMMA

Q I have a 1985 Chevy K10 and I recently blew up the original 10-bolt differential. I'm in the process of installing a 9½-inch 14-bolt six-lug. Does someone make a disc brake conversion for this axle? I can only find the kit for a 10½-inch eight-lug. Or do you think I would be better of installing a full-floater 14-bolt 10½ with a six-lug conversion?

RICHARD

Via nuts@4wheeloffroad.com

A The 9½-inch semifloating 14-bolt is a significant upgrade over the stock 10-bolt, and if you got the axle for free or nearly free, then it's a good swap candidate. However, like your 10-bolt, the semifloating

14-bolt uses C-clips to retain the rear axle, so if you break a shaft, you had better have a spare with you. For this reason and a few others, the 9½-inch 14-bolt axle isn't a very popular swap candidate. Still, it's a six-lug axle and nearly a bolt-in replacement for the 10-bolt, so it's a better option than repairing your truck's broken 10-bolt. There's a possibility that GM offered the 9½-inch axle with disc brakes from the factory during the axle's 16-year production run (1997-2013), but there's no telling what the application might be. It sounds like you already have the axle, and if so, it's going to be easiest to stick with the drum brakes that are already present. You might be able to mix and match or adapt disc brakes to the axle, but it's probably going to be more trouble than it's worth.

Depending on how hard you use your truck, I would opt for building a full-floating 14-bolt if you are going to go through all the trouble of swapping an axle. It doesn't get much stronger than a 14-bolt, and both hub conversions (to get six lugs) and disc brake kits are readily available. Plus, they command about the same prices in junkyards as the lighter duty axle. If you plan on keeping your truck for a while and using it hard, the full-floating 14-bolt is by far the best option. 🍌



SUBMISSION INFORMATION

Confused? Email your questions to the address below with "Nuts, I'm confused" as the subject. Include a picture, if applicable, no smaller than 1600 x 1200 pixels (or two megapixels) as a TIFF, EPS, or maximum-quality JPEG. We also read the forums on (4wheeloffroad.com).

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DITCH DEFENDER

This is Jimmie Padgett's 1995 Land Rover Defender in Florida, Massachusetts. He did not see the drop-off.

TIMOTHY BRINNER

Via whoops@4wheeloffroad.com

MASS MUD HOLE

I got stuck in a mud hole (high-centered the frame on ice) this past March in the Freetown State Forest in Freetown, Massachusetts. Guess I need a winch!

ADAM KATZ

Via whoops@4wheeloffroad.com



SUBMISSION INFORMATION

Send us your wheeling foul-ups! Letters must be signed by the vehicle's owner. Due to the large volume of mail we receive, we regret that not all submissions can be used and none will be returned. Digital photos must measure at least 1,600 by 1,200 pixels (or two megapixels) and be saved as a TIFF, an EPS, or a maximum-quality JPEG file.

WRITE TO: Whoops!, 4-Wheel & Off-Road, 831 S. Douglas St., El Segundo, CA 90245
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JANUARY 2016 VOLUME 39, NUMBER 1

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